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Overhead Charges

As Prof. M. E. Cooley was one of the pioneers in the valuation of public utility properties, he was especially well qualified to discuss the subject of "Overhead Charges" at the Atlantic City convention. His paper, as published in last week's issue, describes elements of value about the allowance for which there is not now much disagreement, although the percentages necessarily differ in various properties. It should be studied by engineers and accountants. In the prepared discussion, as well as in his supplemental remarks at the convention, Professor Cooley revealed the fact that notable progress has been made in the science of valuation. Time and study have shown the existence of real expenditures which did not appear prominently on the surface in the earlier appraisals and were therefore ignored or included only in part. The earlier appraisals were, in fact, inadequate representations of the full costs of property. For this state of affairs both parties to controversies were somewhat to blame in the past. The public for years could see no other elements of value than those of a physical nature. The corporations, with good reasons in many cases, regarded capitalization and value as synonymous, but attempted no analysis to prove their case. If there is to be further progress in recognition of the investment it will be due in large part to better records of costs which the corporations should be able to produce in the future.

The Buffalo Plan of Reorganization

In the plan advanced for reorganization of the International Railway System of Buffalo, which is described elsewhere in this issue, it is proposed to form a new company under New York laws to take the place of the present New Jersey holding company. This change would simplify the form of organization by substituting an operating company subject to the laws of the State for the controlling holding company which is now a creation of a foreign State. The elimination of the holding company is therefore a change that is to be desired. In connection with the plan thus outlined a report has been made by Bion J. Arnold which develops the claim of values underlying the position taken by the company in regard to capitalization. The basic theory of the report is that the company is entitled to a fair return on the investment from the beginning. Any shortages in this return remain in the capitalization and cumulative interest is allowed on them. Much depends, of course, upon the rate of return and the rate of interest upon early losses used in the computation. Mr. Arnold's figures are based upon a rate of 7 per cent in each case and he regards this as reasonable, particularly in view of the fact that no claim is made by the company for fran-

chise value. It is not the purpose, however, according to the plan, to retain permanently the capitalization representing early losses and superseded property. All future surplus, above such fair rate of return as may be fixed, would be applied to the amortization of the part of the capitalization or to construction, which would be another way of wiping out the difference. The theory of capitalization of early losses on a reasonable basis, on the ground that they represent a cost of establishing the business, is one that has been laid down as acceptable by the Railroad Commission of Wisconsin. It is, therefore, a theory for whose acceptance there is excellent precedent.

THE 1200-VOLT ELECTRIFICATION OF THE SOUTHERN PACIFIC COMPANY

The article in this issue on the 1200-volt feeder and trolley distribution system of the Southern Pacific Company's electrified suburban lines presents a most conspicuous example of the availability of high potential direct current for use in and near cities. In this case the problem was to electrify about 120 miles of track in the contiguous cities of Oakland, Alameda and Berkeley for maximum running speeds of 45 m.p.h. and schedule speeds of 20 m.p.h. to 25 m.p.h. As the original steam routes had no connection with the 600-volt street railways in the communities named, the Southern Pacific engineers were free to choose any method of a.c. or d.c. distribution that appeared most suitable for their requirements. Doubtless the adoption of the single-phase system would have greatly simplified the distribution layout, but a high-voltage trolley was out of the question because a great proportion of the suburban line mileage is operated over public highways. The same objection applied to d.c. third-rail operation. The advance of the art, however, appeared to offer an ideal solution in the application of a 1200-volt d.c. catenary which, with the aid of roller pantograph collectors, would satisfy the heavy energy requirements without the employment of excessive copper or numerous substations. Furthermore, it was apparent that the 1200-volt d.c. system could be readily adapted to operate in conjunction with the 600-volt d.c. lines should the future offer such occasion.

The twofold condition of high trolley voltage and high-speed train service called for the best standards in line construction. That these conditions have been amply fulfilled will be apparent from a comparison of this 1200-volt line work with similar pole or bridge catenary construction methods employed on single-phase lines which have trolley potentials of 6600 volts or over. The high factor of electrical safety appears from the fact that the messenger and feeder insulators for the 1200-volt service were specified to withstand respectively a one-minute water electrode test of 20,000 volts and 30,000 volts alternating current. Similarly, the porcelain and wood-break strain insulators used in series for dead-ending trolley and messenger wires were tested to 9500 lb. and 12,000 lb. respectively. These two instances are typical of the care which was taken to have the line fittings of the most substantial character.

A great deal of credit is due to the Southern Pacific engineers for the originality which they have displayed in designing a railway distribution system for a service which must satisfy more onerous operating requirements than preceding 1200-volt d.c. installations in this country.

DIRECT-CONNECTED SHOP MOTORS

Slowly the value of the direct-connected shop motor is coming to be appreciated in electric-railway circles, and in the planning of new shops on a large scale one occasionally finds the problem of machine driving worked out on a thorough engineering basis. It is natural that this system of operation should receive favorable consideration, primarily in the building of new and extensive shop properties, along with the close study of appliances for heating and fire protection which such establishments are now requiring. The new shops of the Utah Light & Railway Company at Salt Lake City, now approaching completion, illustrate this point, every tool which is going into the plant being planned for operation by a separate motor, with the exception of half a dozen small grinding, shaping and winding machines which are inexpensively driven together on the group plan. Although but a few tools have been set up at this writing, the total list compiled by the company covers some thirty-five motors, having an aggregate rating of 386 hp, including six of 183½-hp total rating in the forge shop, twenty-two of 139-hp rating in the machine shop and four of 28-hp rating in the carpenter shop.

Such an installation of direct-connected motors is as yet quite unusual in electric railway practice, but it is bound to be more common in the future as the requirements of forced production become more and more intense. The advantages of direct driving are an old story, but they appear conspicuous even in a half-finished installation. The absence of line shafts, belts and pulleys, the supply of power through wiring carried in iron conduit and the location of controlling starters and switches close by the driven machine in a space having practically no value from the operating standpoint are points of decided benefit even in a shop whose work bears the intermittent character associated with railway rolling-stock maintenance. The amount of clear head room and freedom of surroundings available where the tools are driven by individual motors must be seen to be appreciated to the full. Where from one to two score machines are thus driven under a single roof the absence of obstruction of light, striking cleanliness of operation and evident economy of service, which appear even to the casual visitor, are certain to work out well in routine shop administration.

The selection of motors for individual driving of railway shops covers a wide range of ratings, depending upon the extent of service to be handled. Either direct or alternating-current motors will meet the conditions, although where the latter are used the present practice largely restricts speed changes to mechanical methods. At Salt Lake City all the motors now going into the shops are of the three-phase induction type, while an installation visited recently included only direct-current motors. The former equipment will be almost if not certainly the largest of its kind in the country, taking the total number of separate motors and their combined rating into account and omitting,

of course, the already extensive use of individual motors in steam railroad-shop practice. It is interesting to note that at Salt Lake City the motor range is to be from 1 to 100 hp, the great majority of machine tools, however, being easily driven by units of from 3-hp to 7½-hp rating each. In woodworking 10-hp motors are required for the larger tools, and, as in other industrial service, hoists and transfer-table service demand motors of from 20-hp to 25-hp rating. Air compressors consume the largest amounts of power per machine.

The bugbear of first cost will always tend to daunt the company which takes up the problem of tool driving from the most modern point of view, but after all, when one considers the efficiency of the service rendered, its safety and flexibility, it is probable that less weight will be attached to the necessary investment in motors than has been given it in the past. Power is admittedly cheap when it is produced under favorable conditions in large amounts—at Salt Lake the service is hydroelectric—but so great is the economy of operation in plants where tools consume electrical energy only when in productive service that it ought to be possible to show a substantial saving in many cases through the use of separate motors. In central-station practice large motor loads have been acquired in many cities mainly through the inordinate losses in belts and line shafting occurring when the producing machines were running either idle or light. All these points, including the striking savings of the motor drive in overtime operation, have been emphasized many times in the manufacturing field and should be more generally taken into account in railway shops. The cost of maintaining old line-shaft drives and the expense of installing new rigs to meet changing conditions are frequently overlooked. At Salt Lake City special emphasis is laid by the management upon the importance of operating the machine tools by power independent of the trolley-load fluctuations, and in a large shop of this character there is little doubt that the use of a special supply circuit for the various departments is well advised and tends to maintain the speed of machines without regard to the load on the line. At the same time it is safe to say that the use of individual motors run by trolley current will give better results from the productive standpoint than the old method of running practically the entire shop belted from one or two motors of ancient design and disreputable efficiency.

The argument in favor of modern motors, presented in these columns a few weeks ago, applies just as strongly, if not more strongly, to the use of motors in shop work as to those in car operation. It is true that the aggregate power capacity of the motors used in the shop is vastly less than that of the motors used on the cars. But at the same time the cost of installing modern motors in the shop is less in the same proportion. Many an old railway motor which long ago was discarded for use on the cars because it had outlived its usefulness has been rewound as a shunt machine and is doing duty in driving line shafting in a railway shop. If the success of the individual drive in steam railroad shops teaches any lesson to the electric railway maintenance establishment, it may confidently be predicted that within another five years wide-area tool driving in plants of the latter type will be pretty well discredited.

THE ARRANGEMENT AND WORDING OF CAR SIGNS

One of the many interesting features of the Philadelphia near-side car described in this issue is the system of exterior and interior signs for the guidance of passengers. It is a strange fact that but little attention has been paid on American electric railways to the adoption of a logical system of sign location, although some companies have standardized forms and sizes of signs for various purposes. This lack of order is particularly apparent in the case of interior signs, because as a rule the advertisement racks are used exclusively for paid announcements. This practice forces the railway to use a windowpane or corner for its own statements to the public, no matter how important they may be. The new Philadelphia scheme of placing one of the three signs in the middle of each rack means some loss in advertising revenue, but this fact should not prevent other companies from using this or even more conspicuous positions. Indeed, some companies continuously reserve the end panels over the doors for their own announcements, which may take the form of traffic regulations or the advertisement of some attraction along the line. The location of the third sign in the Philadelphia cars in the arch over the front platform is of course dictated by the nature of the car design.

Perhaps the most striking features of the interior signs are that the announcements of each class will always be posted in the same place and that the text of the signs has been prepared with unusual care. Passengers are not inclined to read long notices concerning transfers and other subjects relating to traffic, a fact which is unpleasantly brought to mind through the occasional disputes between passengers and conductors. It was therefore considered essential that all text should be so clear and so briefly worded that the regulations would easily be remembered by the passengers. The type used is quite large, so that it can be read easily from all parts of the car.

The exterior destination signs, or rather those visible from the street, represent a great departure from current American practice but one which is justified by foreign experience. Many signs of this character, as ordinarily used, are of little value to anyone but the regular passenger, and even he often finds it difficult, when at a considerable distance, to tell whether the car will run to the terminal or will be turned back at some point along the route. This drawback has been remedied in the near-side car by the use of a large illuminated number in the front vestibule to indicate the route and a second sign over the entrance to indicate the terminal. The most interesting exterior sign, however, is the vertical placard which is placed in a panel alongside the platform to give the full route of the car and the location of important places along the line. This card is intended to accomplish the same object as the horizontal wooden signs which are placed on the roofs of many European cars. Such a sign is eminently suitable for Philadelphia, because on most routes the cars going up one street must return on another, a condition which puzzles all but those experienced in the car routes in Philadelphia. The same plan would be applicable to the cars of any city which operate over ziz-zag routes, or around loop tracks in the downtown district.

Power-Distributing System of the Oakland, Alameda and Berkeley Suburban Lines of the Southern Pacific Company—I

This Is the First of Two Articles on the High-Tension and Low-Tension Lines of One of the Largest 1200-Volt Direct-Current Catenary Installations in the World

The first of the series of articles which have been published in this paper upon the 1200-volt d.c. electrification of the Southern Pacific Company at Oakland, Cal., appeared in the Electric Railway Journal of Feb. 4, 1911. This was a description of the power station which had been built at Fruitvale, Cal., to supply energy for the lines. The second article, which was published in the issue for June 17, 1911, described the steel cars and repair shops, the former being characterized by their extreme length (72 ft. 10½ in. over the buffers) and their great lightness (761 lb. per seated passenger of a combined motor car and trailer). The following paragraphs give an account of the overhead construction which has been adopted to meet the requirements of three to six-car trains operated with pantograph collectors at speeds up to 45 m.p.h.

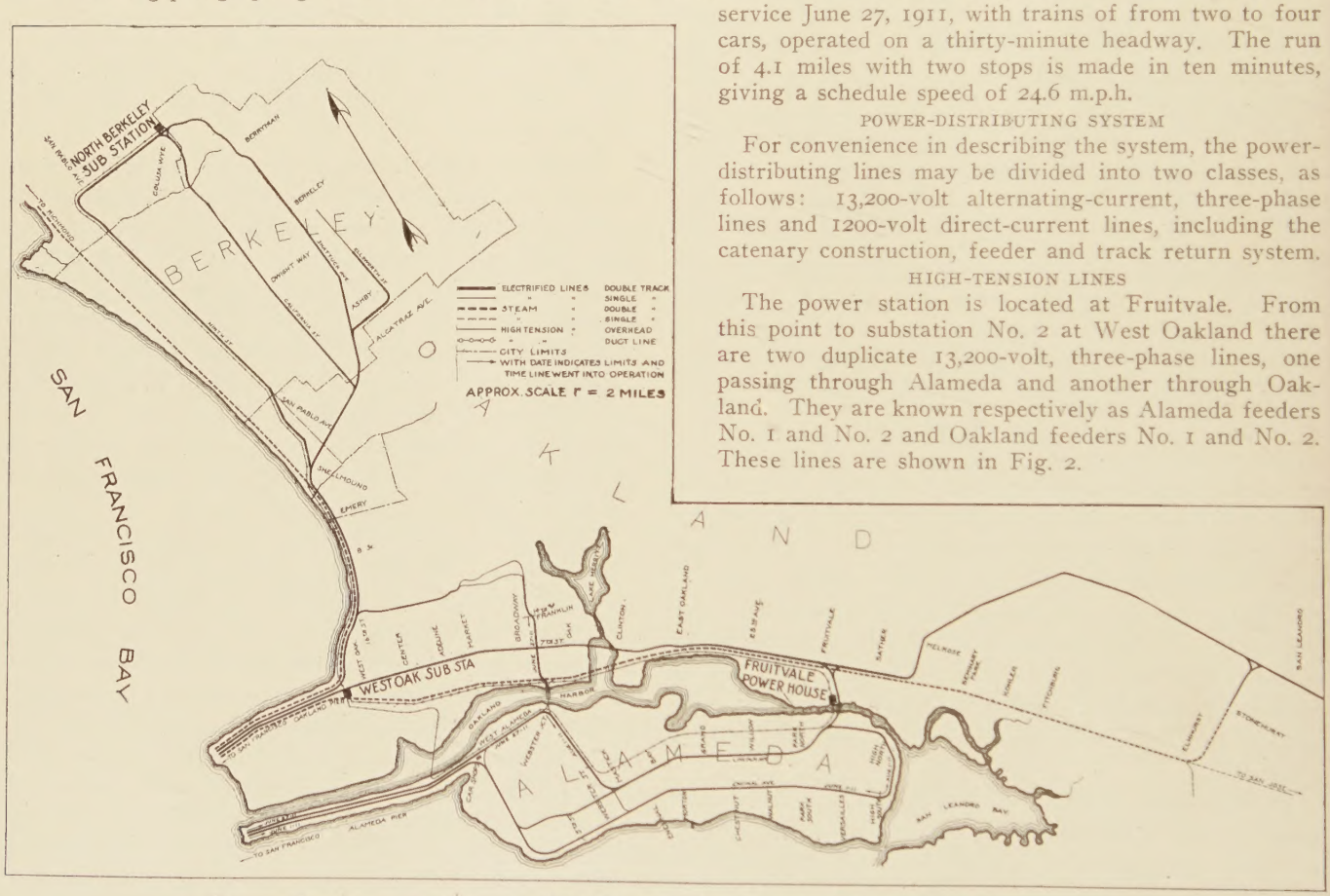


Fig. 1—Southern Pacific 1200-Volt Lines—Map Showing the Electrified Territory

PRESENT EXTENT OF THE ELECTRIFICATION

The present status of this project will best be understood by reference to the accompanying map, Fig. 1, upon which are indicated this company's electrified lines, its steam railways and its high-tension overhead and duct transmission lines in this portion of the San Francisco Bay district. The complete electrification will embrace about 120 miles measured as single track. Some 40 miles of track are now in operation. Practically all of the lines already electrified or to be electrified are double track.

The general character of these lines is indicated by the service conditions which prevail on the electrified routes. The first line to be operated electrically was one from Alameda Mole to High Street South, via Encinal Avenue, which was placed in operation June 1, 1911. On Aug. 1 this service was replaced by the Alameda Loop line, operating to Alameda Mole from Encina and Lincoln Avenues with one to six-car trains on a thirty-minute headway. This is a run of 14.6 miles with sixteen stops made in forty minutes, giving a schedule speed of 21.9 m.p.h.

The Fourteenth Street line from Alameda Mole to Fourteenth and Franklin Streets, Oakland, was placed in service June 27, 1911, with trains of from two to four cars, operated on a thirty-minute headway. The run of 4.1 miles with two stops is made in ten minutes, giving a schedule speed of 24.6 m.p.h.

POWER-DISTRIBUTING SYSTEM

For convenience in describing the system, the power-distributing lines may be divided into two classes, as follows: 13,200-volt alternating-current, three-phase lines and 1200-volt direct-current lines, including the catenary construction, feeder and track return system.

HIGH-TENSION LINES

The power station is located at Fruitvale. From this point to substation No. 2 at West Oakland there are two duplicate 13,200-volt, three-phase lines, one passing through Alameda and another through Oakland. They are known respectively as Alameda feeders No. 1 and No. 2 and Oakland feeders No. 1 and No. 2. These lines are shown in Fig. 2.

As both the Fruitvale power station and the Oakland substation are located on the north side of San Antonio estuary, it was necessary to cross the latter twice with the Alameda feeders, as indicated in Fig. 2, previously mentioned. At Fruitvale this crossing is made by means of submarine cables and near West Oakland by means of a long span which is 200 ft. above high water. Both the submarine and the aerial crossings are more fully described in connection with the 1200-volt distribution.

The Oakland feeders parallel the First Street steam line and run partly overhead and partly underground. From the West Oakland substation duplicate lines run partly overhead and partly underground parallel to one of the

Berkeley electric lines. In all cases the entrances to the substations are underground. Where a change is made from underground to overhead conductors the Davis type of outdoor terminal is used with a three-way splice at the top of the poles between the single-conductor cables attached to the terminals and the three-conductor cable. A cable top of this kind is shown in Fig. 2.

All of the overhead lines are carried on latticed steel poles, as illustrated in Fig. 4, except where they parallel

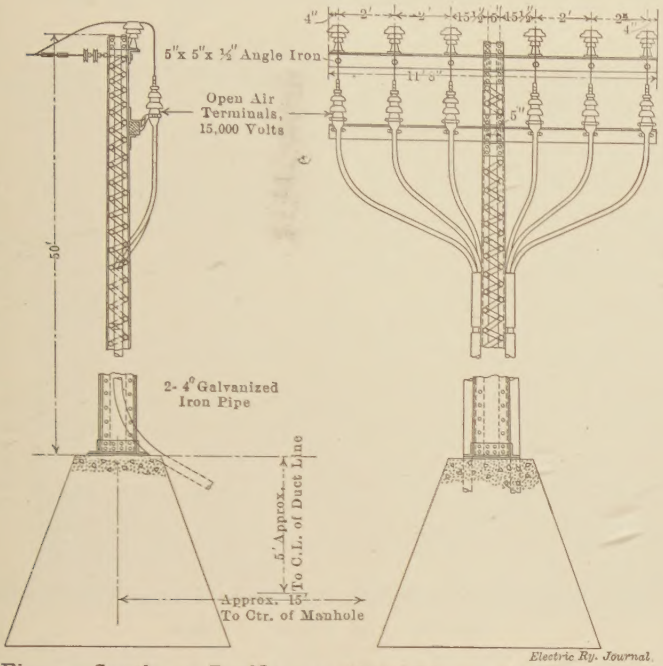

5"x 5"x ½" Angle Iron
Open Air Terminals, 15,000 Volts
50'
2-4" Galvanized Iron Pipe
5' Approx. To C.L. of Duct Line
Approx. 15' To Ctr. of Manhole
Electric Ry. Journal.

Fig. 2—Southern Pacific 1200-Volt Lines—Cable Top for High-Tension Transmission

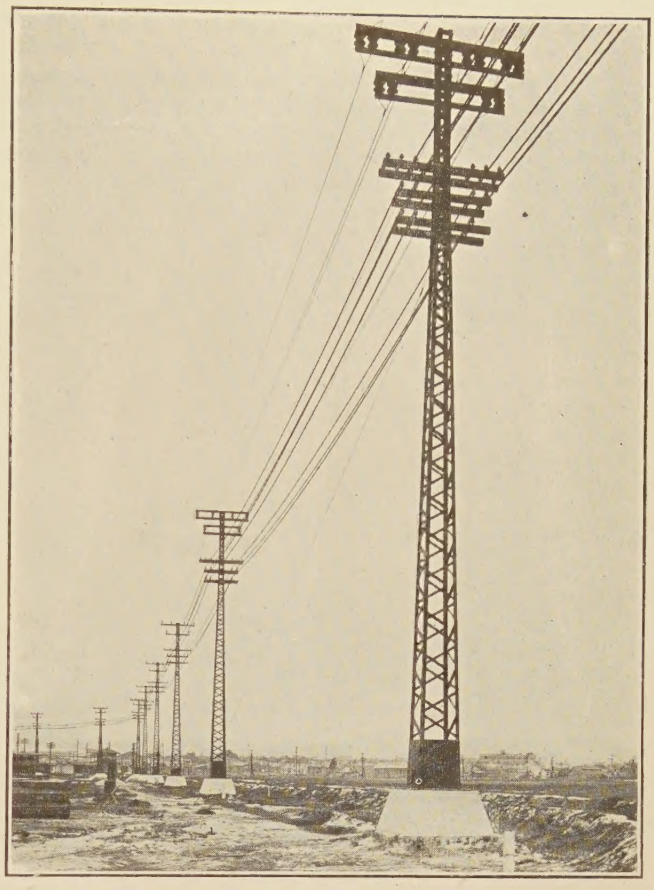


Fig. 4—Southern Pacific 1200-Volt Lines—Transmission Line at West Oakland

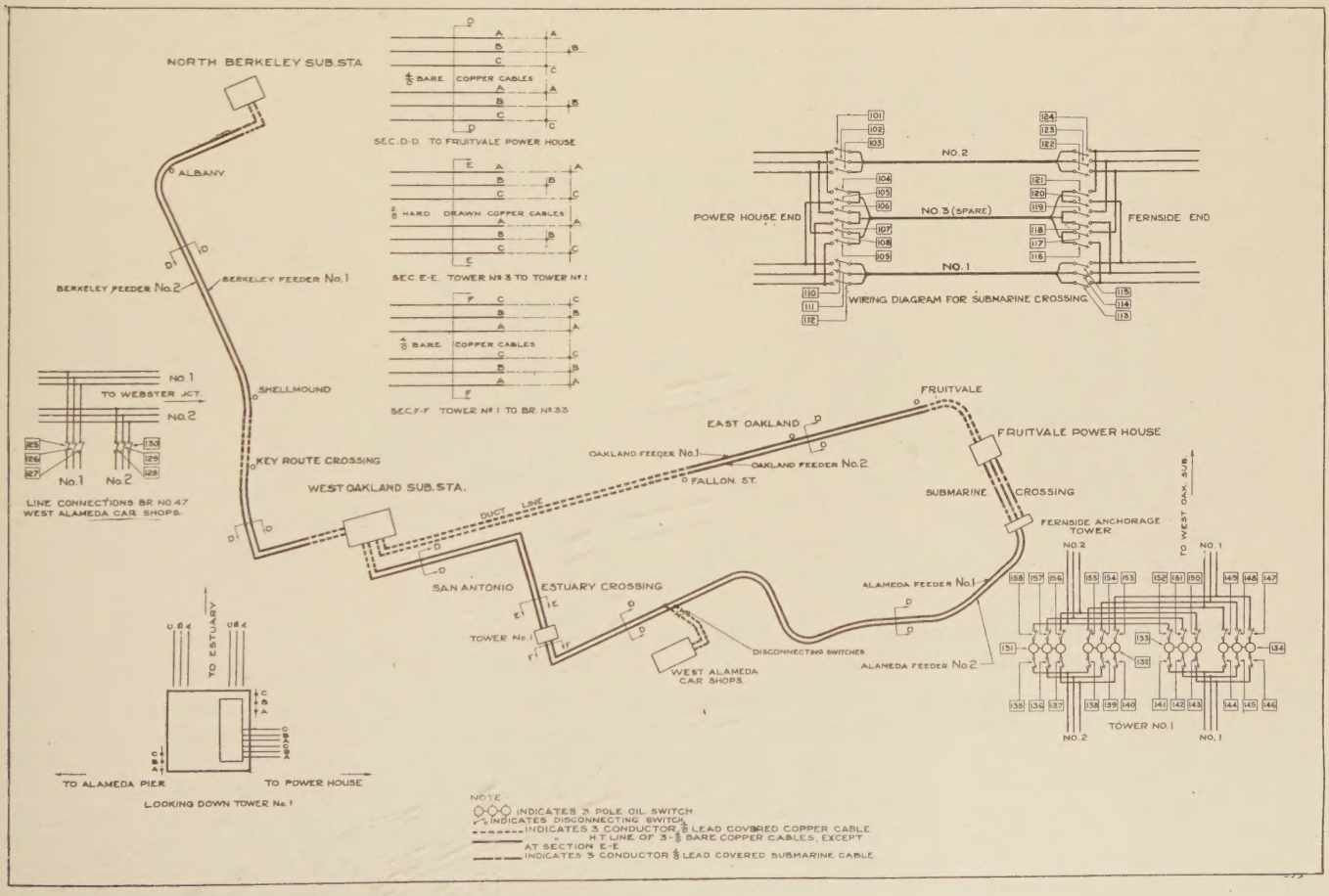


Fig. 3—Southern Pacific 1200-Volt Lines—High-Tension Transmission Feeder System

the two-track and four-track catenary bridges, where they are carried on extensions to the end supports of the bridges, as indicated in Figs. 5 and 7. Every mechanical and electrical detail of the aerial lines was worked out with a very high factor of safety to provide for the salt fogs and high wind velocities which are encountered in the vicinity of San Francisco Bay. Sleet or lightning storms, however, did not have to be taken into account.

The high-tension conductors consist of No. 0000 seven-

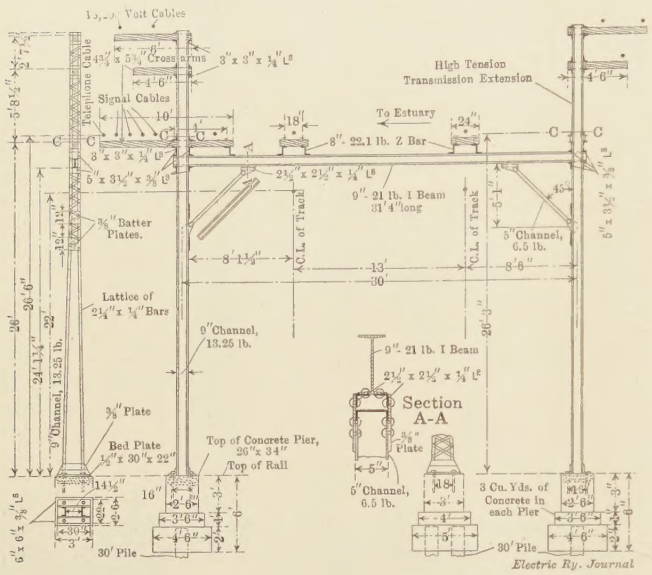

Signal Cables
High Tension Transmission Extension
To Estuary
8". 22.1 lb. Z Bar
9". 21 lb. I Beam 31'4" long
3/8" Batter Plates.
C.L. of Track
5" Channel, 6.5 lb.
Lattice of 2 1/4" x 1/4" Bars
9" Channel, 13.25 lb.
3/4" Plate
Bed Plate 1/2" x 30" x 22"
Top of Concrete Pier, 26" x 34"
Top of Rail
Section A-A
3 Cu. Yds. of Concrete in each Pier
30' Pile
Electric Ry. Journal

Fig. 5—Southern Pacific 1200-Volt Lines—Two-Track Intermediate Bridge

strand hard-drawn copper. The insulators are of three pieces, of the construction and dimensions shown in Fig. 6. The malleable iron galvanized pin for these insulators is shown in Fig. 8. The insulators are made of porcelain coated with a dark brown glaze. The specifications required that each part of every insulator should withstand a test of 30,000 volts and the complete insulator a test of 80,000 volts alternating current applied for one minute continuously. The electrical test was made by inverting the insulator in a shallow pan of water and pouring water into the pan, so that the two bodies of water were made to serve as electrodes. One out of every fifty assembled insulators was subjected to a mechanical test of 4000 lb.

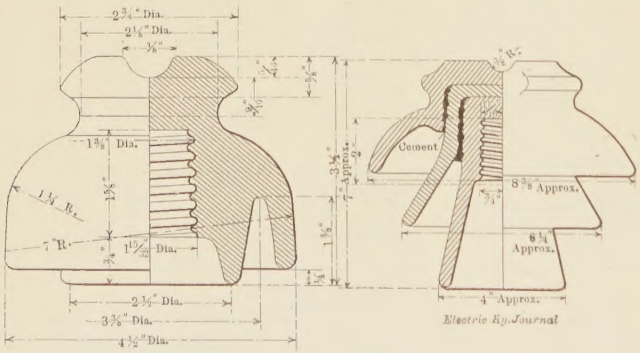


Fig. 6—Southern Pacific 1200-Volt Lines—Messenger Cable and High-Tension Insulators

applied horizontally to the tie wire groove. The insulators so tested were then broken to inspect the texture of the porcelain.

The high-tension strain insulators are of the link type and are made of one piece of dark brown glazed porcelain. Samples of this insulator when assembled with the wires threaded through the wire holes were required to withstand a mechanical test equivalent to a pull of 6000 lb. between the wires. The electrical test required these insulators to withstand 80,000 volts for one minute continuously applied between the wires. When subjected to a precipitation of 3/4 in. of clear water per minute on any surface the insulators were required not to break down or arc over at less than 50,000 volts applied between the wires.

In the underground sections there is used No. 0000 three-conductor varnished cambric lead-covered cable insulated with 7/32 in. of cambric around each conductor and a

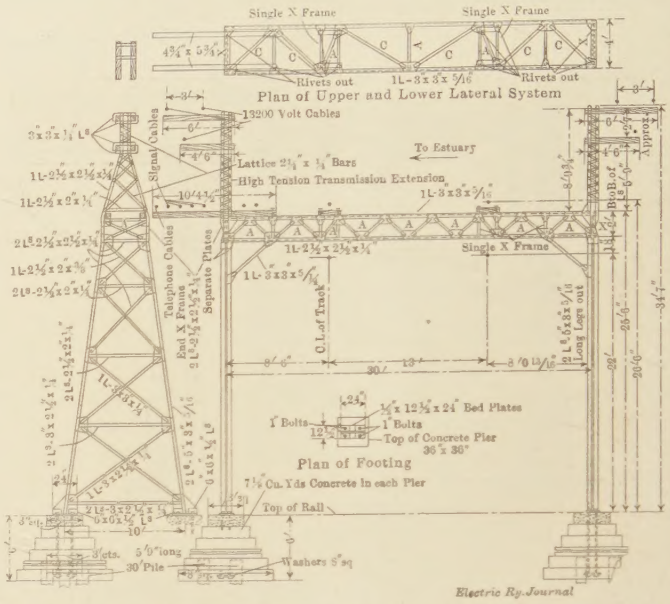


Fig. 7—Southern Pacific 1200-Volt Lines—Two-Track Anchor and Signal Bridge

7/32-in. belt of cambric around the core rounded with jute laterals, all covered with a 9/64-in. lead sheath. Among other requirements of the specifications were that the cambric should not deteriorate under the action of moisture or a continued temperature of 150 deg. Fahr.; that the sheath should consist of an alloy of lead and tin contain-

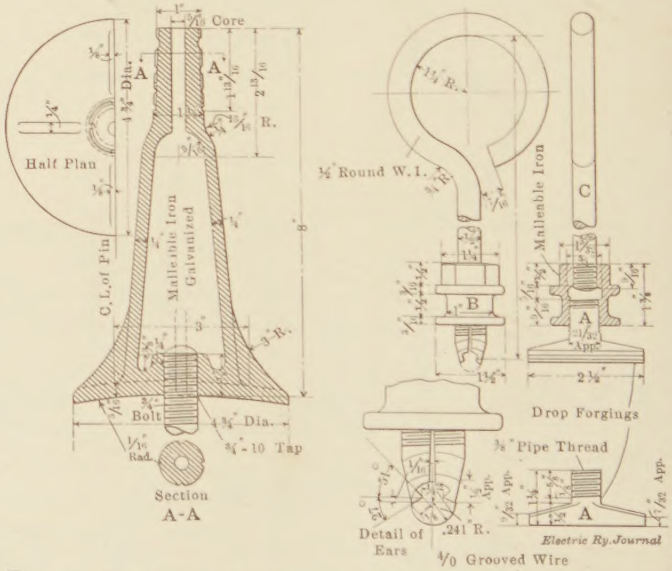
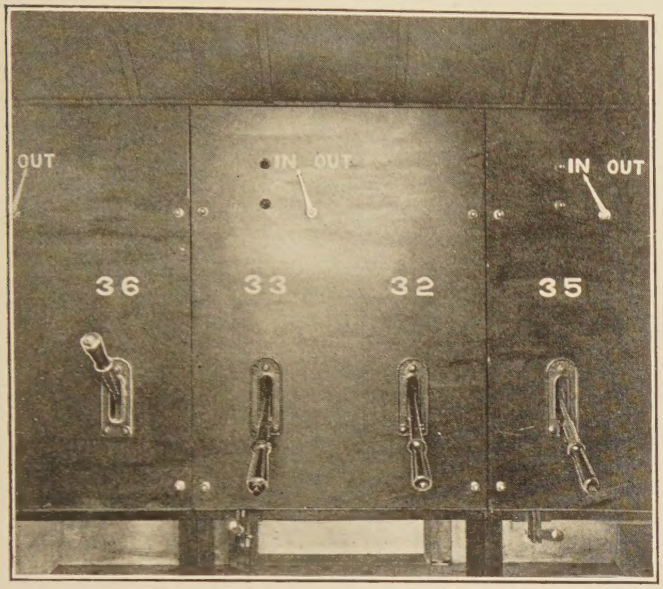


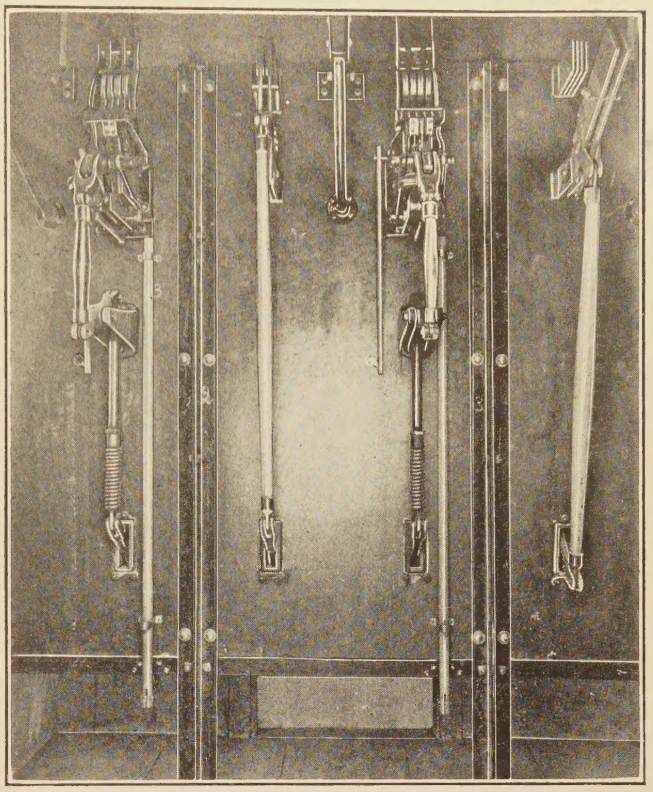
Fig. 8—Southern Pacific 1200-Volt Lines—High-Tension Insulator Pin and Eye Type Catenary Hanger

ing not less than 98 per cent of commercially pure lead and not less than 1 per cent of commercially pure tin, applied over the insulated core; that before testing each cable should pass through a submerging bath of water not less than 6 ft. long wherein it would be subjected to a 40,000-volt alternating current for five minutes between the conductors and between the conductors and the sheaths. After the cables had been drawn in and all cable terminals had been installed they were subjected to 35,000 volts alter-

nating current for five minutes between the conductors and between the conductors and the sheaths. All cable joints were incased in a lead sheath not less than 9/64-in. thick which was filled with insulating compound and joined to the lead sheath of the cable with a waterproof wiped joint. The sleeves were at least 20 in. long and 4½ in. in diameter. A grounding strip of 2-in. x 1/16-in. copper was sweated to the lead sleeves of the cables in every manhole to join the cables and sheaths and to provide for a ground connection. A lead pad was placed under all cables where they left the duct in the manholes. These cables were furnished by four different companies and were supplied under a one-year term.

The three-conductor No. 0000 high-tension submarine cables were insulated with vulcanized rubber compound containing not less than 30 per cent and not more than 33 per cent of Para gum. The specifications required that the gum itself should not contain more than 3 per cent of





Figs. 9 and 10—Southern Pacific 1200-Volt Lines—Front and Rear Views of Sectionalizing Panels at Alameda Mole

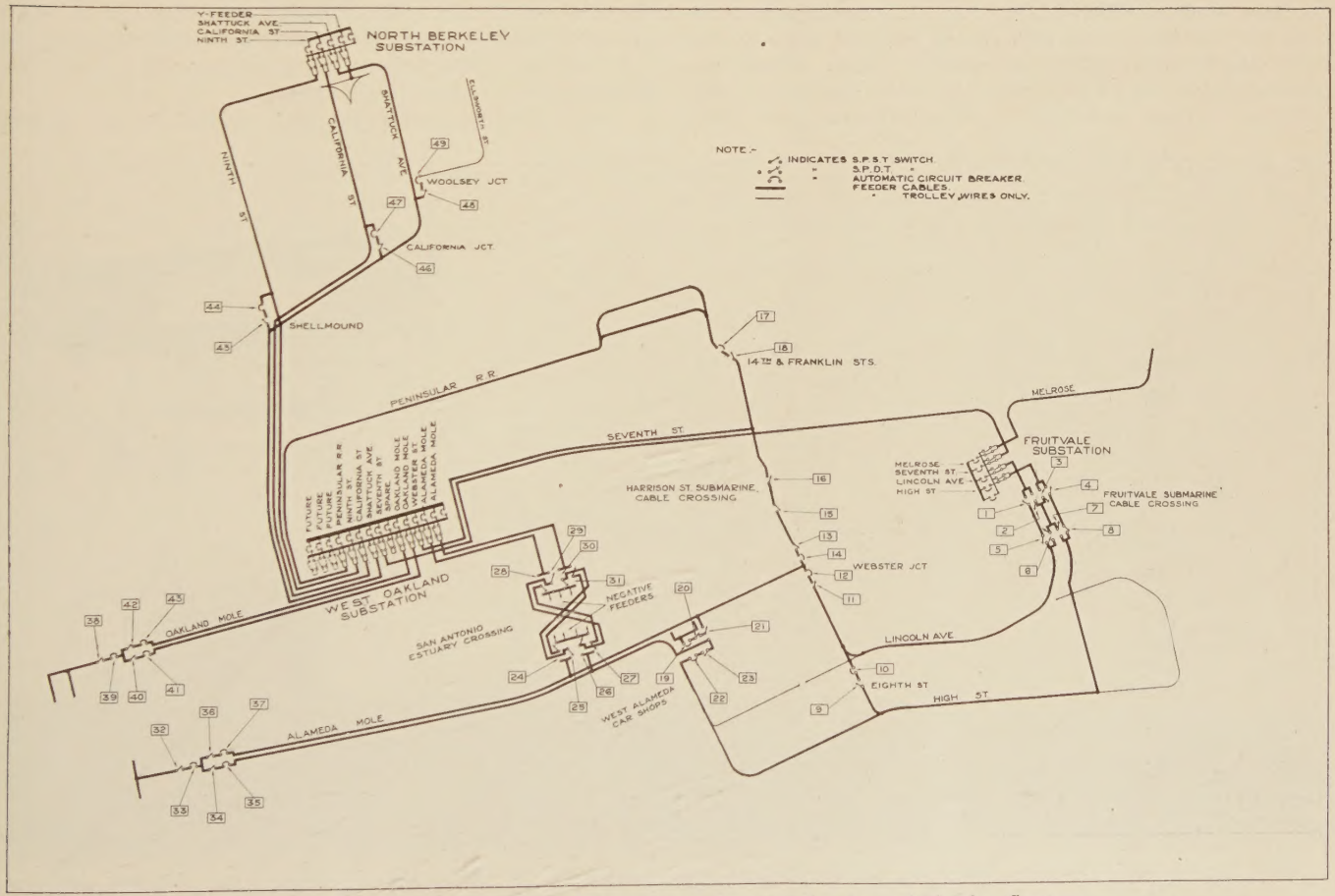


Fig. 11—Southern Pacific 1200-Volt Lines—Sectionalization of Feeder System

resinous extract and after vulcanization should contain not more than 5 per cent of acetone extract and not more than 1 per cent of sulphur. The cable consisted of three conductors, each of which had an 8/32-in. covering of the insulation specified. The lead sheath was the same as that used for the high-tension underground cables. It was protected by two layers of tarred jute which had a combined thickness of not less than 3/32 in. and an armor of not less than No. 4 Birmingham wire gage galvanized steel wire. The armor had two reversed layers of asphalted jute.

Before the test the cable was immersed in water for twenty-four hours and then subjected to 35,000 volts for five minutes between the conductors and between the conductors and sheath. The complete covering had to show an insulation resistance of not less than 1800 megohms per mile measured between any one conductor and between the three conductors and the sheath.

The following mechanical test of the insulation was specified for temperatures between 50 deg. and 100 deg. Fahr. A sample of the insulation the thickness of the insulating wall was cut from the cable. Marks were placed

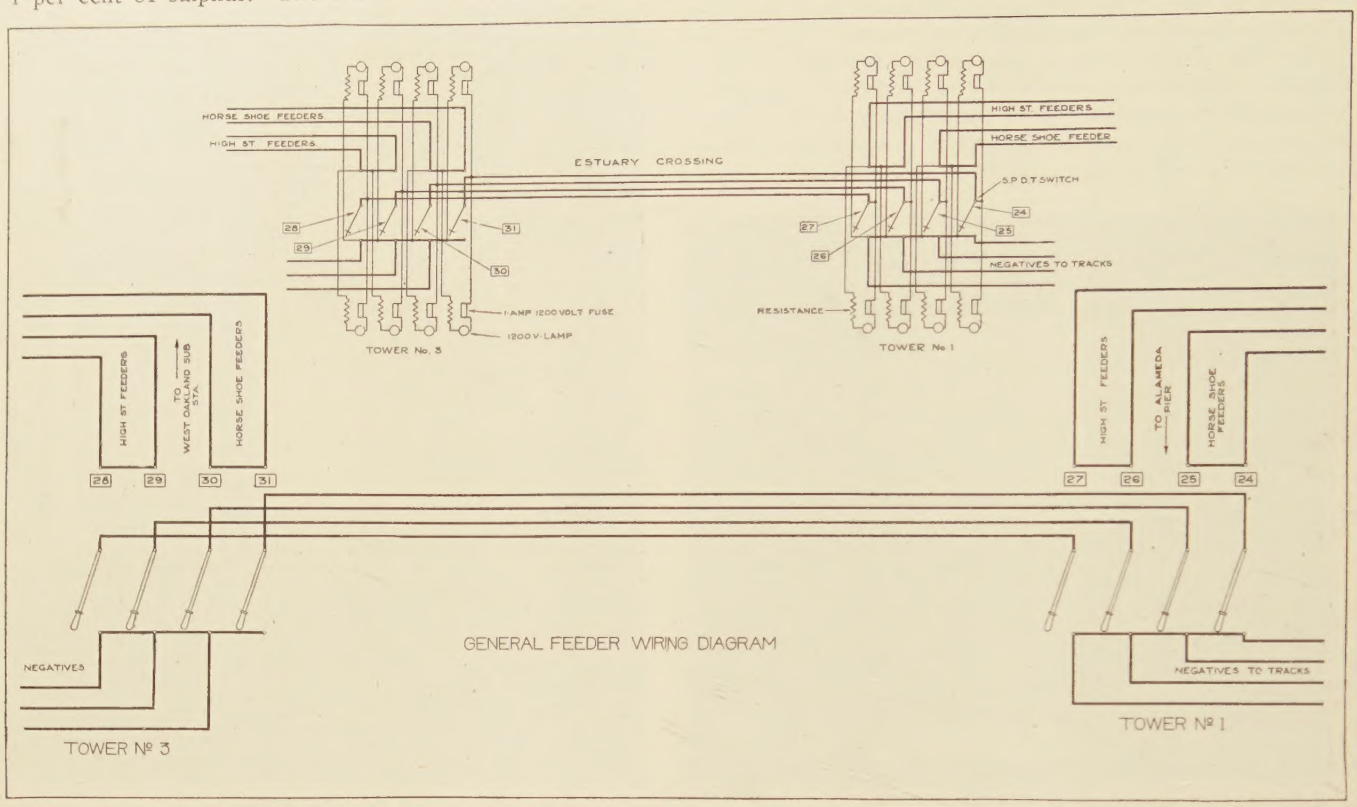


Fig. 12—Southern Pacific 1200-Volt Lines—Feeder Wiring at the San Antonio Estuary

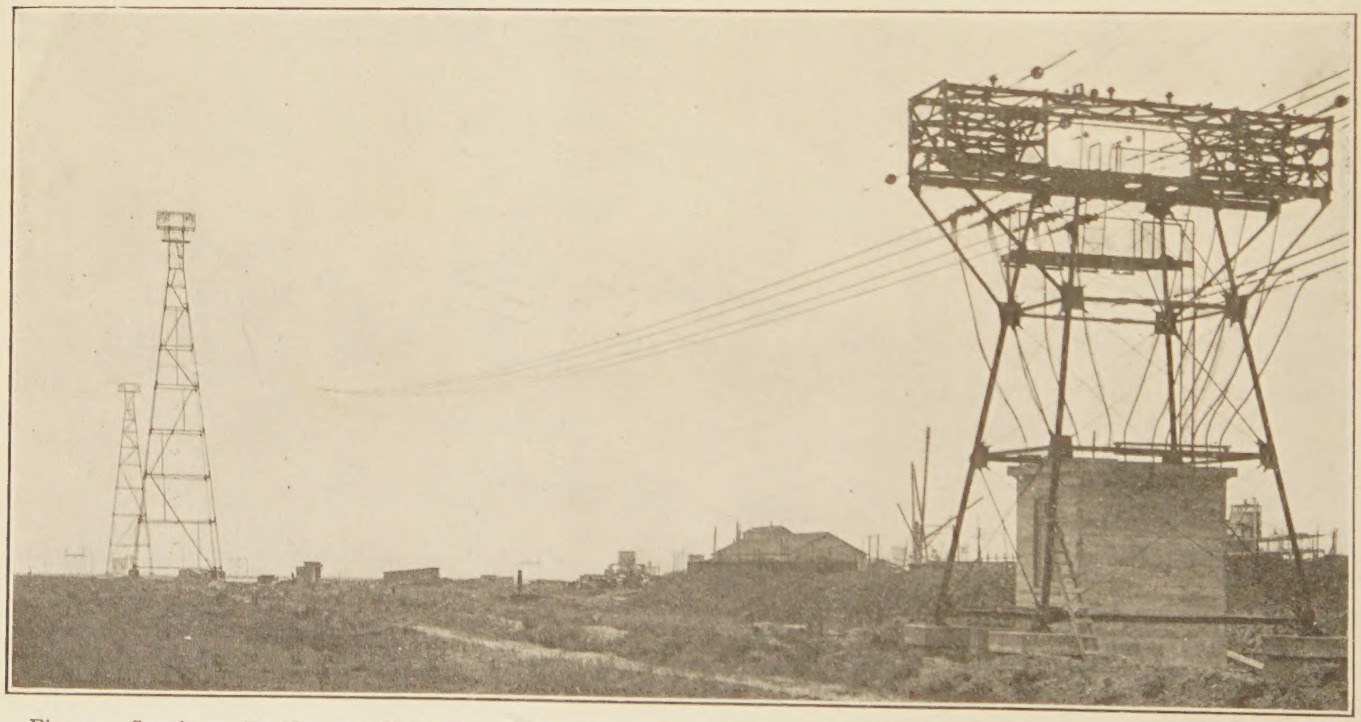


Fig. 13—Southern Pacific 1200-Volt Lines—Towers and Cables at and Near the Crossing Over the San Antonio Estuary

2 in. apart on the sample, which was then stretched until the marks were 6 in. apart, upon which one end was immediately released. It was required that one minute after release the marks should not be over 2⅜ in. apart; also that any sample might be stretched until the marks were 9 in. apart before breaking. These cables were furnished by the General Electric Company.

D.C. FEEDER SYSTEM

In sectionalizing the 1200-volt d.c. feeders every effort was made to obtain advantage of the full conductivity of all the feeders under normal operating conditions, but still to provide for automatically clearing all sections except the one on which trouble occurred. A study of the feeder diagram, Fig. 11, will show that most of the lines are fed from both ends and that the different lines and sections of individual lines are connected through circuit breakers so that in case of trouble the affected section will be automatically isolated. This arrangement does not require that any section breaker should be closed in order to replace the affected section in service. After the trouble has been cleared these breakers are closed at the convenience of and upon orders from the chief operator. Figs. 9 and 10 are front and rear views respectively of the sectionalizing panels at Alameda Mole.

The feeders from the West Oakland substation to the Alameda line cross the San Antonio estuary on the high towers mentioned in connection with the high-tension lines. Two towers 250 ft. high are located one one each side of the estuary 1290 ft. apart and the third tower (No. 3), 35 ft. high, is located on the West Oakland side 1331 ft. from the middle tower. Four 2,000,000-circ. mil bare stranded aluminum cables are anchored at tower No. 3, carried through the top of tower No. 2, suspended from I-beam trolleys, and at tower No. 1 are attached to counterweights through chains which run from four large sheaves at the top of the tower. The counterweights are adjusted to give a sag of 50 ft. with no wind pressure. Provision is made to take up the variations due to wind pressure and temperature so that the tensions of the cables remain constant under all conditions. The lowest point in the span between towers No. 2 and No. 3 is at No. 3 and the respective lengths of spans were calculated to balance the horizontal strains in the cables of tower No. 2.

In addition to the d.c. cables there are six No. 00 hard-drawn stranded copper high-tension conductors and four No. 4 solid phosphor-bronze conductors, all of which are anchored at all three towers. At tower No. 1 all cables are carried down the tower to the switch house located within its base, where provision is made for the switches necessary to transfer both the high and low-tension tower span conductors to any of the corresponding land conductors. At tower No. 3 a similar switch arrangement is provided for d.c. cables only. The feeder wiring diagram at the estuary is shown in Fig. 12. Fig. 13 presents the three towers. Fig. 15 shows the 1200-volt double-throw switches which are located at tower No. 3, and Fig. 16 is a view of tower No. 3 alone.

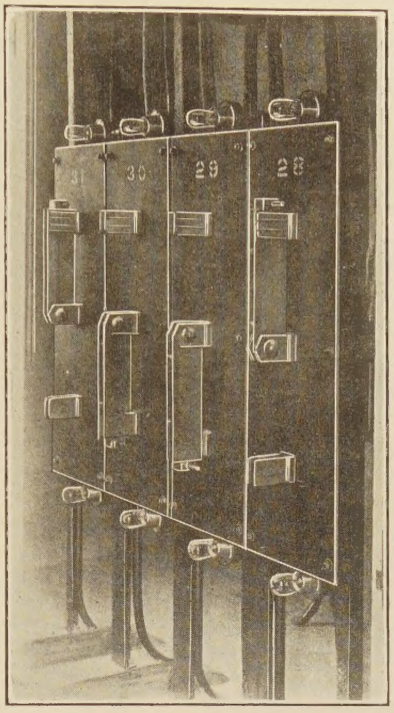


Fig. 15—1200-Volt Double-Throw Switches at Tower No. 3

At the Fruitvale power station and substation all a.c. and d.c. feeders leave the building under the ground. Those running to Alameda have an underground switching chamber where provision is made for transferring either of the two 1200-volt feeders to any one of the three submarine 1200-volt cables and either of the two three-phase feeders to any one of the three three-phase submarine cables. Similar provision is made in the switch and anchorage tower on the south side of the estuary. All the feeders leave these towers aerially.

NEGATIVE RETURN SYSTEM

It was necessary to lay out the track connections for the system through reactance bonds. The greater portion of the electrified line is equipped with automatic block signals and all junction points and crossings are protected by electric interlocking plants, which are operated by alternating current using both track rails for the circuits.

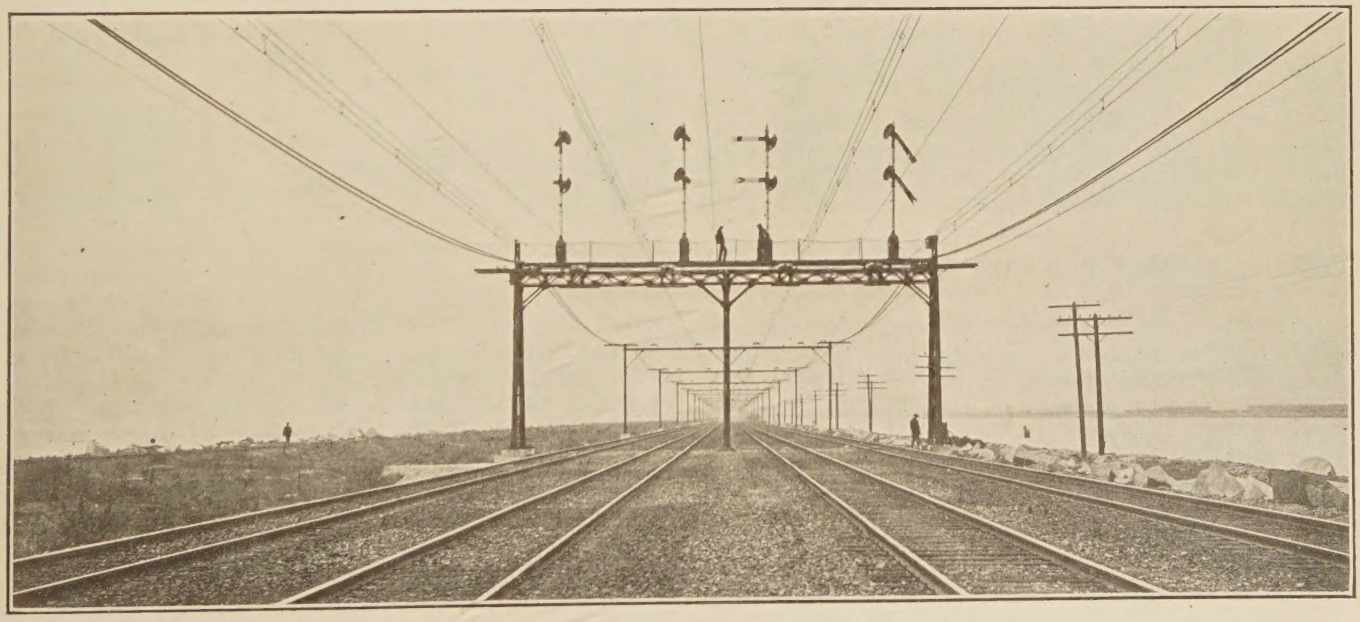


Fig. 14—Southern Pacific 1200-Volt Lines—Catenary Bridge Construction on a Four-Track Tangent Section

With but few exceptions, both rails of all tracks are used for both signal and d.c. return circuits. The exceptions, where single rail circuits are used, are in terminal yards and at certain junction points where complicated signal

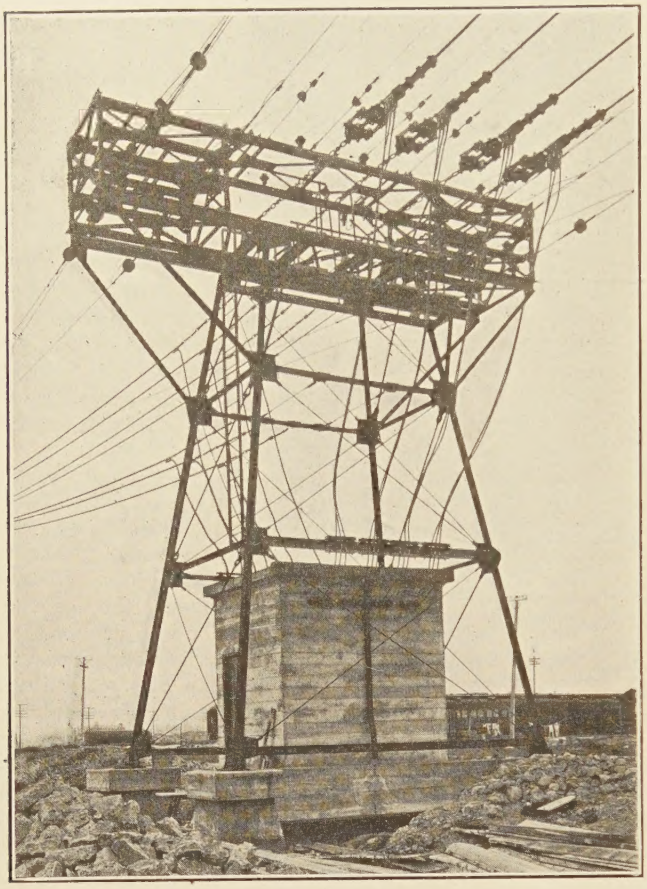


Fig. 16—Southern Pacific 1200-Volt Electrification—Cable Anchorage at Tower No. 3

track circuits make the use of both rails inadvisable. All rail joints are bonded with American Steel & Wire Company's pin-expanded terminal type bonds which are installed under the continuous joint plates. The bond is composed of two equal branches of stranded cable, having a total capacity equivalent to No. 0000 copper.

SECOND ARTICLE

The second and concluding article will describe the 1200-volt catenary system, with the standards followed for bridge and pole work and the characteristic features of insulators, hangers and other parts.

ELECTRIC RAILWAY PUBLICITY EXHIBITS AT BOSTON

One of the most striking and interesting exhibits at the "New England Products" Exposition now being held in Mechanics' Building, Boston, under the auspices of the Boston Chamber of Commerce, is that of the Bay State Street Railway Company. A large map in colors, about 12 ft. high x 5 ft. wide, shows the routes traversed by the company, extending from Newport, R. I., to Nashua, N. H. The lines used for passenger service and electric express service are in blue, and those used for the passenger service alone in red. Blue and red incandescent lamps, flashing alternately, also indicate the routes. Four transparencies showing twenty-two pictures of places on the lines occupy a side wall. These show parks, pleasure grounds and also some of the company's passenger and express cars. A large stereomotograph machine shows eighty-six scenes of handsome places along the company's lines and statistics of industries in the cities reached.

Another attractive feature of the exhibit is the display of industrial and farm products produced in the Bay State company's territory. The exhibit includes shoes from Lynn and Brockton, silverware from Attleboro, hats and woolens from Taunton, cotton cloth and prints from Fall River and Lowell, codfish and cod products from Gloucester, pianos from Wakefield and granite from Rockport and Quincy. One would find it difficult to name any other territory traversed by a single company where the products are more varied and more extensively produced.

The exhibit also contains pictures of the company's power stations, carhouses and types of cars used. The entrance to the alcove is trimmed with evergreen and surmounted by an illuminated letter sign bearing the company name. The exhibit was designed and executed by H. A. Faulkner, who has charge of the publicity for the system.

Exhibit of the Bay State Street Railway

The exhibit of the Boston Elevated Railway Company is also noteworthy and attracts much attention. Its principal feature is a miniature elevated structure consisting of two tracks with switches at either end and a semaphore signal. A model of one of the company's new-type cars travels back and forth, propelled by real motors, taking current from an energized third-rail. As the car goes over the insulated joint it sets the signals and reverses its motion. A large photograph shows the new cars for the Cambridge subway, which are 69 ft. 2½ in. in length. Eighteen photographs grouped together illustrate the evolution of rapid transit in Boston since the stage coach was in use prior to 1858. The first horse car, 1856, is shown, and the last, used on the Marlboro Street line in 1900. The first electric car, 1890, seated twenty-six persons and cost $2,100. The first two-truck car, 1892, 34 ft. 4 in. in length, seated thirty-four persons and cost $3,500. The 1903 car was 38 ft. 3 in. long, seated thirty-six and cost $4,000. The 1906 semi-convertible car was 44 ft. 8 in. long, seated forty-eight and cost $7,000. The 1911 prepayment cars are 48 ft. 2½ in. long, seat fifty-two and cost $8,500 each. Scenes reminiscent of the horse distemper of 1872, when horse cars were hauled by men, are given. The display also includes an illuminated designation sign recently adopted by the elevated company showing route number and destination. A portable air compressor completes the list of exhibits.

The Public Service Commission, Second District, has selected twenty-one cases which provide for the elimination of thirty grade crossings. The Legislature of 1911 appropriated $350,000 for this work. The estimate of the cost of eliminating the thirty grade crossings is $1,200,000, of which the State will pay one-quarter, the municipalities one-quarter and the railroads one-half.

Report on Los Angeles Transit Conditions

B. J. Arnold Finds Great Traffic Congestion in Los Angeles and Recommends the Construction of Additional Tracks by the Municipality

Bion J. Arnold has completed a partial report on the transit situation in Los Angeles, Cal. This part of the report relates to the condition of congestion existing on Main Street, Los Angeles. The report has been approved by the municipal railway committee, which was appointed by the City Council. The partial report will be followed shortly by a complete report on the entire transportation problem. The report in part is as follows:

"There can be little doubt that the first step to be taken toward improving the transit conditions in Los Angeles and vicinity is to relieve the congestion of traffic due to the operation of both interurban and local surface cars on Main Street. Fully 50,000 riders on both systems are delayed from five to forty minutes during the rush hours each day, and as many more are inconvenienced during the non-rush hours, due to the fundamental defects of the transportation arrangements along Main Street.

Los Angeles Report—Car Congestion on Main Street

"At the interurban terminal building of the Pacific Electric company at Sixth and Main Streets we find a stub end terminal arranged in such a way that the incoming track of the north division intersects the outgoing track of the south division. All of the entering and leaving tracks curve directly in front of the building upon Main Street, which carries a heavy vehicle traffic. The movement of the cars in and out of this building, therefore, is hampered constantly.

"All interurban cars using this terminal must wait their turn to discharge and load their passengers and no provision has been made, by means of storage tracks, to supply trippers or extras to take the place of delayed cars. The loading arrangements are not designed to handle crowds conveniently or comfortably. In order to take a car one must stand before a closed gate until his car is called and as the schedule becomes disarranged during the blockade there is no way of telling when any particular car is to be expected. Frequently the delays to the standing patrons become exceedingly tedious, and when the car does come there is a general scramble and contest to obtain a seat. The height of the car steps above the ground-level platform makes loading slow and inconvenient, especially to passengers with hand baggage.

"The cars leave the terminal slowly, as they must find their place in the procession of local cars and at every street intersection the entire line of mixed traffic is further delayed, either by crossing cars and vehicles or by surface cars weaving their way in or out of the file. At one place the intersecting line becomes part of the main line for a short distance, causing a double delay, which is made worse by the overhang of the cars and the spacing of the track centers on the curves, which permits only one car to pass at a time. The fact that the cars from different systems and routes are alternated prevents the moving of the cars across the intersections in lots of two and three at a time and, as it is hard to tell whether a car is going straight ahead or is to turn a corner, both the vehicle traffic and the pedestrian travel are considerably delayed at nearly every street crossing.

"The use of a narrow gage track by the local cars and a standard gage by the interurban system results in duplex tracks which cut up the surface of the streets.

"This description is not intended as a criticism of the designers of the arrangement or of the present management, as it is apparent that the tracks are taking care of more cars than they were intended to serve at the time the terminal was put in operation—some seven years ago. The present situation is plainly due to the remarkable growth of the city and district, which is developing much more traffic than was anticipated.

"The solution which will provide permanent relief from present Main Street conditions will be an arrangement

which will eliminate the interurban system entirely from the grade of city streets by means of either a subway, an open cut or an elevated structure.

"This permanent arrangement, however, will require considerable time, perhaps several years, for designing, financing and building, and, therefore, there is need for a tem-

Los Angeles Report—Map of Congested District

porary expedient which will at once relieve the present transit situation, which is now almost intolerable and which is rapidly growing worse.

CONSTRUCTION OF RELIEF TRACK RECOMMENDED

"Of several streets parallel to Main Street which might be used for relief tracks, San Pedro Street, with its recently opened extension to Aliso Street, is by far the most available and desirable. The cars of the northern division of the interurban system could be diverted from Aliso Street down San Pedro Street to Sixth Street, and thence to a terminal, using the lower floor of the present Pacific Electric Building.

"The difference in levels between the front of this building on Main Street and its rear entrance on Los Angeles Street fortunately allows for a very convenient rearrangement, continuing the use of the present waiting room, which can be enlarged by opening the restaurant room in the rear.

"Seven tracks with a capacity of three cars on each track can be supplied with ample loading and unloading platforms on the lower level and the two tracks on the upper level with their platforms can also be retained. Additional waiting rooms can be secured by using some of the upper level space now devoted to express office and stores, and also by turning part of the basement, which is not being used for any purpose at present, into a concourse.

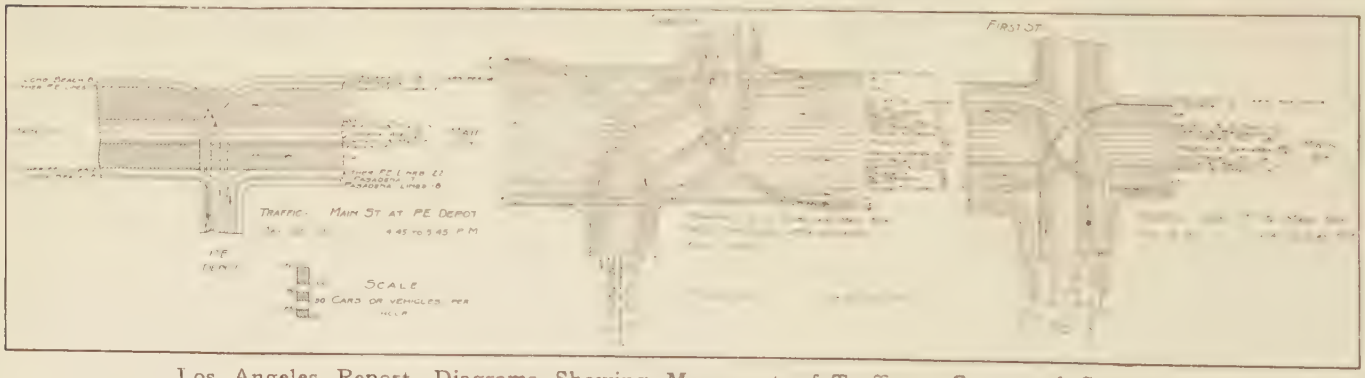
"The new arrangement will provide two improvements which will be greatly appreciated. Storage tracks will be possible on which cars can be held in readiness to take the place of delayed cars—in other words, to act as a reservoir which will allow irregularities in the schedule to be removed and the cars run practically on time. The use of more than two terminal tracks will allow the cars on various routes to be loaded slowly and it will be possible for the passengers to wait for the leaving time, seated in the cars, instead of being herded in the standing room before the gates as at present. Speed and comfort, two of the essentials for good transportation, will thus be greatly increased by the proposed changes.

"The elimination of a large number of interurban cars from Main Street, particularly during the rush hours, would at once remove the fundamental cause of considerable poor service during that time on the local surface system, and it should be possible for the Los Angeles Railway to reroute some of its cars so as to do away with the many curves at street intersections in the downtown district. The lessening of the noise on Main Street, by decreasing the number of heavy interurban cars crossing the special work at each street crossing, will not be the least advantage of the proposed plan.

"As the suggested use of San Pedro Street is only intended to be temporary, pending the working of a more permanent arangement, and is apparently the most feasible solution of the present difficulties, some way should be found by the city and the companies to bring this about.

"The double track on San Pedro Street from Aliso to Seventh Street may be considered as the first section of the proposed municipal railroad. With a connection to the tracks of the Pacific Electric Railway at Aliso Street on one end and at Sixth Street and at Seventh Street on the other, and a possible connection to the Southern Pacific Railway at Third Street, carload freight could be delivered and collected to and from any spur or siding along its length, thus opening up at once a centrally located section nearly a mile in length, particularly adapted for warehouse and factory purposes.

"The city should control this important main line in the heart of the industrial district, as it has spur track possibilities which will permit railroad connections throughout a large territory which is now dependent upon teams and trucks for its freight service. It will be apparent that San Pedro Street is in a position to serve both the passenger and freight traffic of the city, the former at once and the latter more and more as the industrial establishments locate along the lines of the main track and its branches. Eventually, as the passenger business is withdrawn from the surface, the freight use of the tracks will become more pronounced. While the interurban cars are using the tracks the freight should be hauled largely at night.



Los Angeles Report—Diagrams Showing Movement of Traffic at Congested Corners

FRANCHISE PLAN

"There are apparently two financial and franchise plans by means of which these proposed tracks on San Pedro Street could be built.

"One plan, which might be called 'the immediate municipal ownership plan,' would be for the city to construct the tracks with its own funds as part of the proposed municipal railroad and enter into an arrangement with the Pacific Electric company for the use of these tracks on a rental basis.

"The other plan, which may be termed 'the ultimate municipal ownership plan,' would be for the Pacific Electric company to build tracks under an agreement that the city is to have the right to purchase the tracks at any time at actual cost, and that as soon as a permanent right-of-way can be provided by means of an elevated or sub-surface structure the company will withdraw its interurban cars from the street surface. This latter plan would practically be an indeterminate franchise, which is a form of permit for public utilities that is rapidly growing in favor, as it combines the advantages of both the short-term franchise and the long-term franchise without their objectionable features."

ILLUSTRATIONS

The illustrations accompanying this article are from the report. The diagrams show the movement of traffic on Main Street at the intersection of three cross streets. The width of each band represents the number of cars and vehicles per hour during the rush hours. Forty per cent of the cars on the local system and 60 per cent of the cars on the interurban system are affected by the congestion on Main Street. The three principal points of congestion are at the Pacific Electric Terminal at Sixth and Main Streets, where the interurban cars enter and leave their stub-end terminal by means of double-track intersecting curves, at Third and Main Streets, and at First and Main Streets.

ACTION ON REPORT

The committee, in transmitting the partial report to the City Council, urges prompt action on the suggestions made by Mr. Arnold and indorses the plan to have the city construct the tracks with grooved girder rail construction and to permit the Pacific Electric Railway to use them until the Municipal Railway, which is planned to connect with

Los Angeles Report—One Mile of Car Congestion on Main Street

the harbor, is in operation. The committee does not condemn the alternative plan to permit the company to build and sell to the city at a fair price when the municipal system requires the tracks.

The report of the committee is accompanied by a letter from Paul Shoup, first vice-president of the Pacific Electric Railway, who concurs in the general plans recommended. Mr. Shoup states: "Mr. Arnold's conclusion that the best remedy at present available is the use of San Pedro Street is fully concurred in, though it means the maintenance of two routes of travel between Aliso Street and the Pacific

Los Angeles Report—Interurban Terminal

Electric terminal, instead of one, as at present. What the financial result to the railway will be cannot be foretold, but unquestionably the service rendered the public will be greatly improved."

The committee is distinctly in favor of the plan for the city to build and rent to the Pacific Electric Railway. If the city has not the money to build, or prefers another arrangement, the committee does not condemn it. The Council is requested to indicate which plan shall be discussed.

Some opposition to the proposal, however, developed at the meeting of the finance committee of the city from residents on San Pedro Street who object to the construction of a line on that thoroughfare.

LETTER BALLOT ON ENGINEERING ASSOCIATION STANDARDS

Under date of Oct. 6 H. C. Donecker, secretary of the American Electric Railway Association, sent out to all members a circular letter announcing the result of the letter ballot on the adoption of the proposed standards and recommended practices approved at the 1910 convention of the Engineering Association. The text of the circular letter follows:

"On Dec. 20, 1910, in accordance with a plan of procedure approved by your executive committee, a letter ballot on the subject of standards and recommended practices of our affiliated Engineering association was submitted to the member companies. Inasmuch as this was the first attempt to obtain by this method an expression of the sentiment of the members with regard to matters of this kind, we have tried by extending the date for counting the ballots from time to time to give all of the companies an opportunity to vote, with the result that the balloting was not declared officially closed until Sept. 15, 1911. The votes were counted on that day and below is given a summary of the results."

COUNT OF LETTER BALLOTS.

Submitted for Approval as Standards—	Yes.	No.	Total.	Necessary to Adoption.	Result.
Copper wire table.....	119	5	124	63	Adopted
No. 0000 grooved trolley wire.	119	29	148	75	"
Submitted for Approval as Recommended Practice—					
7-in. T-rail for heavy service in paved streets, Section A....	136	18	154	78	"
7-in. T-rail for light service in paved streets, Section B....	133	20	153	77	"

Hearing at Buffalo on International Traction Reorganization

The Subject Considered Was the Proposed Plan to Organize a New Company Which Would Acquire the Property of the Existing Company—The Principal Witness at the Hearing Was B. J. Arnold, Who Presented a Plan by Which the Proper Capitalization of the New Company Could Be Determined

A hearing on the proposed plan of reorganization of the International Traction Company, of Buffalo, was held by the New York Public Service Commission, Second District, at Buffalo on Oct. 18. In addition to Chairman Stevens, of the commission, who presided, Commissioners Decker, Sague and Olmsted were present. Officials of the International Railway, including Thomas Penney, the president, and Thomas E. Mitten, vice-president, were in attendance. Porter Norton and James O. Moore, of the firm of Norton, Penney, Spring & Moore, of Buffalo, and Morris Cohn, Jr., represented the new company, the International Traction Railways, which it is proposed to form. Charles K. Beekman, of Philbin, Beekman, Menken & Griscom, of New York, represented the committee of bondholders of the International Traction Company.

While Mr. Penney made an introductory statement in reference to the plan of reorganization, the principal witness at the hearing was Bion J. Arnold, who presented a detailed report on the elements of value underlying the theory of capitalization which is the basis of the proposed plan.

STATEMENT OF MR. PENNEY

Mr. Penney outlined briefly the plan to form a new corporation under the laws of New York State, the International Traction Railways to acquire the properties. He thought that it would be conceded that the management studied with care how to conserve the property and how best to serve the interests of the public. At present the company was in a position where it was difficult for the management to do what it would like to do in the matter of additions and betterments. This was not the fault of anyone now in the properties. The organization was very involved and complex. The New Jersey holding company controlled the New York operating companies. It was desired, if possible, to simplify that arrangement and do better work for the community at large than the management had been able to do in the past. There were two ways of getting money for capital expenditures. As the co-operation of practically all of the bondholders had been obtained, it was possible to return to New Jersey and, by reopening the mortgage, procure the necessary money. The other way, and the one that was desired by the interests in the company, was to come into New York State and submit all the affairs of the properties to the jurisdiction of the Public Service Commission. A great deal of help had been received informally from the commission as to the best method of procedure to effect this result. Certain steps were necessary to effect a corporate transfer from New Jersey to New York. In the first place it was necessary to organize a New York corporation. To transfer the property certain proof would have to be made. At the suggestion and with the approval of the commission the company had secured the assistance of Mr. Arnold and had had an appraisal made, which was submitted. The company did not ask any increase in capitalization. No actual sale of the properties from one to another was contemplated by the plan. It was planned simply to take from one hand to another, to take the name of New Jersey from the securities and substitute the name of New York.

Mr. Penney added that it would be noted in the appraisal that no claims were made for any values on account of the franchises owned by the company, although up to the time of passage of the public service commission law these franchises had been regarded as of extraordinary value. Almost all of the franchises had been granted in perpetuity and were still regarded as of great value. Mr. Penney believed that the management would be justified in the transfer of entity from New Jersey to New York, and the commission would be justified in approving such a transfer. That would place all the property under the jurisdiction of the commission and would give the security holders a tangible mortgage upon actual property. To a large extent the transfer would be a matter of form. The people who were now in control of the property believed in the principle of regulation and in doing things for the public.

TESTIMONY OF B. J. ARNOLD

The examination of Mr. Arnold was conducted by Morris Cohn, Jr. Mr. Arnold, upon request, described his various activities in traction matters, referring to his work for the Public Service Commission for the First District of New York and for the cities of Chicago, Pittsburgh, Providence, Toronto, Los Angeles and San Francisco. He stated also that through the company of which he was the head, or as an individual, he had acted for about 300 leading corporations of the country.

Mr. Cohn asked about the statement in the report that "the franchises as they now stand seem to assure the company a practically perpetual right to operate." Mr. Arnold said that most of the franchises were for 999 years, and those which were for shorter periods were so necessary if the system was to be operated satisfactorily as a whole that the company would have to continue to exercise these rights if the public was to have efficient service. Referring to the policy by which lines had been built freely into new territory before development assured much traffic, Mr. Arnold stated that these lines were now beginning to justify the investment in them. If the density of population was taken as a standard, Buffalo was supplied somewhat better with street railway lines than the average city. The property was maintained in the condition in which well-maintained properties were usually kept. The future would require extensions commensurate merely with the growth of the city.

In answer to a question as to the fair rate of return on the investment in a street railway property similar to the International system, Mr. Arnold said that he did not want to give a general answer applicable to all properties. Each case should be decided by itself. In view of the plan of reorganization, which included no claim for franchise value, a fair rate of return in this case would be not less than 7 per cent. A fair return had not been realized because capital was expended so rapidly in new lines that settlement did not follow fast enough to furnish the required earnings. The tables in his report giving the expenditures for operating expenses, including taxes and ordinary maintenance, but not including renewals, showed that the property was not improperly managed. The average annual increase in net earnings in the last ten years had been 9.127 per cent.

In the appraisal as submitted depreciation had not been deducted. If depreciation had been deducted it would have been necessary to add to the amount on which a fair return had not been realized, so that the net result, under the controlling feature by which the plan of reorganization was

designed to allow for a fair return on the total investment, would have been the same.

CONSTRUCTION OF EXTENSIONS

Harry D. Sanders, assistant city attorney, then cross-examined Mr. Arnold.

In discussing further the reasons for the construction of many extensions in the past Mr. Arnold said that electric lines had often built unprofitable extensions in order to keep out competition. Owing to the policy of public service commissions in preventing the duplication of existing facilities the necessity for this practice did not now exist generally. In the past, however, a company could protect itself absolutely only if it had a franchise to operate on every street should it see fit, which was never the case.

The interest on the loss as computed was compounded, Mr. Arnold said, at the rate of 7 per cent per annum. The plan provided that when the company had earned a return on the fair value, and also the past losses plus interest thereon, all the surplus should go into a fund to retire the cost of superseded property and the early losses so that in time the public would pay only for service based on the interest requirements of property actually engaged in performing the service. The surplus accumulated in this fund could be used either to retire the securities representing superseded property and early losses or to add to the value of the property by the construction of extensions without addition to the capital account until the value of the property equalled present capitalization.

If the company had made enormous profits in the past and if the records showed that it had done so, Mr. Arnold would say that the excess capitalization should be eliminated to the extent of these excess profits. But since the records showed otherwise, Mr. Arnold said, the amounts should remain in the capitalization until surplus earnings of the future provided for their retirement. If the company was not to be allowed a value for its early losses the rate of return should be higher than 7 per cent.

Referring to the cumulative excess of $11,185,908 shown at the end of 1910, according to Mr. Arnold's figures, Mr. Sanders said that if the rate of return had been computed at 6 per cent instead of 7 per cent, no cumulative excess would have been shown.

Responding to a question asked by Mr. Cohn, Mr. Arnold said that if he had included the value of the franchises in his appraisal a much higher total valuation would have been shown.

Chairman Stevens said that under the theory of the treatment of deferred returns the "investment in property" was considered as cash. The entire theory, therefore, was based on the correctness of the figures of "investment in property." Did these figures represent actual money, and from what sources were they secured? Mr. Stevens gave instances of early consolidations of properties into companies that were taken into the system afterward. According to the figures which he had, the early properties showed much lower book costs of construction than were shown immediately afterward by the companies into which they were consolidated. Mr. Arnold stated that he believed the figures he had used represented actual investment.

Chairman Stevens said that the commission wished to have the appraisal show full details and totals as to depreciation and present value of all elements of the property in addition to the cost of reproduction new.

Mr. Arnold said that he was prepared to furnish these figures if asked to do so.

Mr. Cohn stated that it was the desire of the company to furnish to the commission all the data requested. If, however, the theory on which the report was prepared was sound no reduction for depreciation was necessary.

Mr. Arnold said he thought that the theory was a reasonable one as the rate of interest used was so low. He referred to the allowance in capitalization for early losses made by the Railroad Commission of Wisconsin in the case affecting the Antigo Water Company. A provision for future amortization of the value of superseded property and of early losses, which he had introduced in this report, was a good one, and this was the first time that he had been able to persuade a company to agree to a provision of this nature.

Chairman Stevens said that the commission would not pass any opinion on the plan advanced, but that it wanted an estimate of the actual depreciated value of the property. The hearings might be suspended until these figures were prepared. Mr. Arnold said that he could compile such a report.

Chairman Stevens said it was apparent that the correctness of the results depended on the correctness of the figures showing the investment in the property. The commission would require evidence by the production of the original sources of information showing how the figures were determined. Another hearing will be held when the figures desired by the commission are ready.

REPORT OF MR. ARNOLD

The introductory chapter of the report of Mr. Arnold says in part:

I. SCOPE OF REPORT

"This report includes a determination of the value of the physical investment in the property of the International Traction Company, together with a statement of the loss that has accrued in the operation of the property from the time of the organization of the constituent companies now included in the International Traction Company to Dec. 31, 1910. which serves as a basis for the determination of a fair value of the capitalization to be used in the reorganization plan now proposed by the International Traction Railways.

II. INTERNATIONAL TRACTION COMPANY'S PROPERTY

"The International Traction Company is a holding company which has acquired a group of properties operating in Buffalo, Niagara Falls and adjacent territory, the life of those considered dating from 1850 to the present. These various constituent corporations have had the usual experience of starting as separate companies, and of gradually building up their various properties, those in Buffalo being operated as horse car lines from 1860 until 1890, in which year electrification was started and completed in 1893. Additional companies were organized to operate in Buffalo at this time, and extensive additions were made to the mileage, both by the companies then operating and by the new companies.

"During the period from 1890 to 1902 consolidations occurred on various properties, the final result being that in 1902 the International Railway Company was formed and became possessed of the properties, franchises, rights, exemptions and privileges of its constituent companies. The property as it now stands includes the street railway systems of Buffalo, Niagara Falls and Lockport, together with a number of interurban lines, including a line running from Buffalo to Niagara Falls, N. Y.; a line running on the Canadian shore from the Falls to Queenstown; the two bridges crossing the Niagara River, one at Niagara Falls and the other at Lewiston, a line running from Buffalo through Tonawanda and Lockport to Olcott Beach; and a line running from Buffalo to Lancaster. The total mileage of the property now operated is 370.912.

"In the city of Buffalo there are 219.64 mlies of track. For over 174 miles of this trackage franchises were granted for a period of 999 years, or without restriction as to time, and for the remaining 45 miles franchises are limited; about 14 miles being granted for 25 years, 11 miles for 40 years, and 19 miles for 66 years. The routes of the suburban or interurban lines are secured by franchises from the various cities, towns and villages in which the railway operates, or by ownership or lease of private right-of-way. The franchises as they now stand seem to assure the company a practically perpetual right to operate.

"During the life of the property from 1860 to date many changes have necessarily been made in the equipment. As previously stated, the lines at Buffalo were originally operated as horse car lines, electrical operation being installed from 1890 to 1893. Since this time a large amount of rehabilitation work has been required on account of changes of equipment, and because of the introduction of more modern apparatus and equipment required in supplying to the public a service continually increasing in quantity and character. The mileage of the company was rapidly extended, lines being constructed in the suburbs of Buffalo in order to meet the demands for services required by the city. The amount of such construction was somewhat higher than for cities of the same population, due to the relatively small density of the population in Buffalo. These various demands, however, have been met by construction from time to time, entailing a higher investment in the property than was warranted by the immediate returns from the operation of the system. This comparatively large investment at an early date in the history of the property was dictated by the general policy of the company, which was to supply adequate service to the territory in which it operated, on the theory that the returns from the operation of the property built up by this liberal policy would at a later date fully repay the owners of the property for all investments made during this development period.

"The entire period from the organization of the first of the constituent companies to the present may well be considered as a development period, during all of which time the expenditures in the property have been comparatively large, and during which time the relative returns from the property have been slowly but steadily increasing. The territory is now reasonably well covered with lines, and the service is furnished by modern equipment throughout. For the future, additional extensions of the property will be commensurate with the growth of the city, and the returns from the operation of the property should increase at a higher rate, providing for the company a fair return on the capital invested, and should, in addition, provide sufficient funds to offset in a measure the losses that have occurred in the operation of the property up to the present time.

"The mortgage under which the bonds of the International Traction Company were issued provided only $5,000,000 for extensions, but on account of the rapid growth of the property since that time an amount of money considerably in excess of $5,000,000 has already been expended for this purpose. In order that additional money may be available for future extensions, a reorganization now becomes necessary, which will provide for the refunding of the present securities, and also authorize a flexible bond issue under the regulation and control of the Public Service Commission ample to cover the property extensions that must be made during the coming years in order to furnish adequate service to the territory. Reorganization is necessary, not on account of any fault in operation or in the receipts from operation, which have shown a consistent increase throughout the life of the property, but only on account of the fact that more bonds are not available for the purpose of providing money to meet the normal extensions that must be made to such a property.

BASIS OF REORGANIZATION

"The reorganization proposed consists of the formation of a new operating railway company to be called the International Traction Railways. The company proposes to acquire all the holdings of the other companies and to issue securities which in general shall be exchanged par for par for the securities now outstanding. It is proposed that the new company authorize a bond issue to provide for this exchange and for the future needs of the property.

"The following premise is adopted for the purpose of determining the fair value of the capital account that should be used as the basis for the proposed reorganization.

"It is assumed that the International Traction Company, the selling company, should receive full value for all moneys expended in the property from the time of its inception to date, together with the cost of reorganization, carrying charges, contingencies, and brokerage for bond discount.

"It is further assumed that the selling company is entitled to receive a fair interest return upon all moneys referred to in the above paragraph, invested in the property from year to year.

"Since the net returns from operation from the inception of the property to date have not been equal to a fair return on the capital as invested from time to time, it is assumed that the purchasing company will reimburse the selling company for the amount of capital expenditures to date, together with the sum of deferred earnings to Dec. 31, 1910, due to the company's not having actually received an amount sufficient to pay a fair return upon the actual cash which has been put into the property.

"While it is fair that the International Traction Railways should pay the International Traction Company for the actual cost of its physical property plus the deferred earnings above mentioned, it is but right to the public that the securities to be issued for these deferred earnings, which consist of the losses (in the sense of money not received) incurred in the early operation of the company (amounting in this case to the difference between a fair return upon the actual capital invested and the smaller amount the company actually realized), as well as the securities to be issued to cover bond discount, and value of superseded physical property, together with interest upon these three items, should be eventually amortized and retired so that the public will eventually be paying a fair return upon the actual value of the physical property then in use. In other words, the new company proposes to reimburse the old company for the cost of the property now existing and the property that has been superseded, as well as for bond discount and the deferred earnings that have accrued from the operation of the property to date, and proposes to include the sum of these amounts in its capital account at present, but acquiesces in the recommendation that, if this is done, it will eventually amortize all such amounts as are not actually represented by physical property as soon as the results of operation of the property provide an excess over a fair return, as may be hereafter agreed upon between the Public Service Commission and the company, all of which excess will be used for this purpose until such items have been completely eliminated from the capital account of the company.

BASIS OF REPORT

"To serve as a basis for this work an appraisal showing the cost to reproduce new the physical property of the International Traction Company as of April 1, 1911, has been made.

"The premises upon which the appraisal is made are such as to arrive at the actual investment in the property, including all construction charges, general organization, legal expenses and carrying charges, together with discount paid in financing the property.

"The cost of the property as shown in the appraisal includes no promoter's profit or development charges. The appraisal covers only the property that is found in place as on April 1, 1911.

"An appendix to the appraisal contains a statement showing the 'cost new' and the 'scrap value' of those parts of the property that have been superseded, and which, therefore, are not included in the appraisal. Such property has either been worn out in service or supplanted by property of later design or of different type, or has been removed on account of city ordinances or because of street improvements. From the appraisal proper, including all items now found, and from the appendix to the report, including all

items that have been superseded, the total capital expenditure which has been made on account of the property, but not including profits of promotion, if any, can be determined.

"In determining this capital expenditure deduction has been made for the amounts realized either through sale or through use as second-hand material of those items that have been superseded. The appendix also contains a statement of the investment in the property by years, this statement having been made up on the basis outlined above from the recapitulation sheets showing the investment in the property by years, including the 'cost new' of both the present and superseded property, together with the scrap or salvage value of the superseded property.

"As a basis for determining the loss that has accrued from time to time, a statement has been compiled showing the net income from operation for the entire period considered. For the period from 1867-82 the reports of the State Engineer of Railroads have been used. For the period from 1883-99 the reports of the Board of Railroad Commissioners have been used. For the period from 1899-1910 the records of the International Traction Company and associated companies have been used. By means of these reports a continuous statement has been prepared showing the gross earnings, the operating expenses, including taxes, and the net income.

"These figures indicate that the operating ratio has steadily decreased, the averages for the various groups of years being as follows: 1867-70, 94.1 per cent; 1871-80, 78.5 per cent; 1881-90, 81.1 per cent; 1890-1900, 63 per cent; 1901-10, 62.2 per cent. While the operating ratio during the period of horse car operation was about 80 per cent, during the last twenty years, or during the period of electrical operation, the operating ratio has been about 63 per cent. As this operating ratio, based on an operating expense including taxes and maintenance, but not renewals, compares favorably with the operating ratio of other similar companies, it would appear that the property has not been improperly managed.

"In arriving at the operating expense all charges other than direct operation have been eliminated. In order to do this, it has been necessary to deduct from the operating statement of the company as submitted certain items which for purpose of this study should not be included in operating expense.

BASIS OF DETERMINING ACCRUED OPERATING LOSS

"For the purpose of determining the loss that has accrued during the early operation of the property, the assumption has been made that the company, if its return is to be regulated and limited from now on so that it will not have an opportunity to make liberal earnings out of which to recoup its early losses, should not only be credited with a fair return upon the actual capital invested in the property in the past, as well as given an opportunity to earn it in the future, but also, following decisions that have been made by state authorities, should be reimbursed for early losses, as well as a fair return upon them, assuming that the property has been judiciously managed.

"The rate of interest assumed is 7 per cent, which is not unfair in consideration of the contingencies attendant on the operation of public-service properties, and particularly so in this case, since the capital account on which the return is computed includes only the actual money invested in the property and nothing whatever in the way of promoter's profit or for franchise value.

"In view of the small earnings of the property in the earlier years, when necessarily large expenditures were required for construction and for expansion during the years when the territory would not in immediate returns warrant such expansion, all of which causes tended to delay the time when the company could earn a fair return on the capital invested, the rate of 7 per cent applied to the deferred earnings is considered to be fair.

"A table setting forth these accrued losses is prepared on the above assumptions and includes as its basis (1) the investment in the property year by year and (2) the statement of earnings. As seen from this table the accumulated deficit with interest existing at the end of the calendar year 1910 is $11,185,908.

"It should be noted that for the purpose of this estimate it makes no material difference whether expense of renewals is charged to capital account or is included in operating expenses for any given year. It is essential, however, that the charge be not included in both places. From the operating ratios shown in the statement it is evident that the operating expense does not include charges for renewals throughout the earlier years of the property. Also it is known that it was not the policy of companies at that time to charge renewals against operation.

CAPITAL VALUE

"In Table I the various values above referred to are collected and may under the premises assumed be taken as a fair value to be paid to the International Traction Company by the International Traction Railways for the physical property and various holdings of the company.

Table I.—Summary of Capital Value.

Cost new value of physical property now held and operated	$25,957,015
Capital charged against investment for property that has been superseded	5,677,952
Total capital charged on account of physical property	$31,634,967
Bond discount	4,574,135
*Total	$35,889,102
Accrued returns to date	11,185,908
Total capital value	$47,075,010

*$320,000 subtracted for capitalization of Erie Railroad lease.

"In this analysis no account whatever is taken of stocks that may have been issued or that are outstanding, nor of any other securities of the property herein considered, other than bonds. Bond discount, however, has been included in the statement of the final cost of the property.

"From the International Traction Company's standpoint the purchase price of about $47,000,000 is required in order that the present holders of the property should receive full value for the capital that they have put into the property during its life, together with the full value of the reasonable return of 7 per cent on the moneys expended. From the International Traction Railways' standpoint the purchase price is fair, if the net income from the operation of the property in the future will allow them to receive a fair rate of return on the capitalization and will in addition provide sufficient surplus to allow the amortization of that part now or in the future included in the capital account which is not represented by actual physical property.

"The franchises under which the company is operating are of long duration and, whereas the earlier years of the company's operation of the property have been attended with a deficit, the results of the operation with the increased growth of the territory in which the property is situated should be far more profitable and should be such as to allow the company to make up in the future years the deficit that has accrued in the past.

"The net results of operation for the year 1910 are as follows: Gross receipts, $5,985,000; operating expense, $3,964,000; net income, $2,021,000; bond interest, $1,451,900; surplus, $569,100. This is equivalent to the following dividends on present stock: $5,000,000 preferred at 6 per cent, $300,000, and $10,000,000 common at 2.691 per cent., $269,100; total, $569,100. In other words, the earnings of the year 1910 were sufficient to pay all bond interest and 6 per cent on the preferred stock and over 2½ per cent on the common stock.

"The net earnings have been increasing conistently throughout the life of the property, and should continue to increase with the further growth of the territory served. The operating ratio of the company has been decreased until in the year 1910 it was 66 per cent, including not only

taxes, but also a charge of 7½ per cent for renewals. This charge, or one approximating it, should in the future provide the funds for such renewals as are necessary to maintain the integrity of the physical property, assuming that the ordinary expenditures for maintenance are made and included in the operating expense. This being done, and with extensions to property financed by the issuance of additional bonds, the net income available from operation should within a reasonable time provide a fair return (such as may be agreed upon between the Public Service Commission and the company) upon the capital invested, and a surplus which should then be used for the amortization of that portion of the proposed capital account representing development charges, which include the value of superseded property, bond discount and the accrued losses in the property to date."

Table II.—General Summary of Physical Property.

	Cost New.
Track	$7,875,209
Paving	[illegible]
Electrical distribution system	[illegible]
Rolling stock	[illegible]
Power plant and substation equipment	[illegible]
Fixed tools and shop equipment	141,274
Stores, supplies, floating tools and miscellaneous	350,367
Furniture and fixtures	[illegible]
Buildings	1,810,817
Real estate	1,705,224
	$23,522,750
Legal expense, carrying charges and contingencies, 10 per cent	2,352,275
	$25,875,025
Extraordinary carrying charges	17,238
Investments	64,752
Total cost new	$25,[illegible]

Table II shows a general summary of the physical property.

The allowance for superseded and abandoned property includes 10 per cent on cost new for legal expense, carrying charges and contingencies.

The rates of discount on bonds range from 5.4 per cent to 24 per cent and on the total of $32,790,500 the average rate is 13.9 per cent.

The table to which reference was made in the testimony, showing the investment, income at 7 per cent, etc., gives the following data as of 1910: Investment in property, $35,889,102; income at 7 per cent, $2,458,817; actual net income from operation, $2,239,276; excess of 7 per cent over actual income, $219,541; cumulative excess, $11,185,908.

Another table shows the distribution of the 1909 operating ratio, as follows: Maintenance and repairs, Public Service Commission, 9 per cent, additional 1 per cent, total 10 per cent; renewals and depreciation, Public Service Commission, 7.5 per cent; operation of power plants, 8.75 per cent; operation of cars, 23.9 per cent; general expenses, 10 per cent; taxes, 5.85 per cent; total 66 per cent.

ORGANIZATION OF THE GAS, ELECTRIC & RAILWAY ASSOCIATION OF OKLAHOMA

As a result of a meeting of parties interested called by Prof. Harold V. Bozell, director of the school of electrical engineering at the University of Oklahoma, on Oct. 6, the Gas, Electric & Railway Association was formed, with the following officers: President, Noel R. Gascho, manager of the Alva Light & Power Company; vice-president, Fred. W. Caldwell, manager of the Shawnee Gas & Electric Company; secretary-treasurer, Prof. Harold V. Bozell, Norman; directors, Galen Crow, manager of the Guthrie Light & Power Company, and Paul M. Galloway, manager of the Tusla Gas & Electric Company, each for one year; V. H. Francis, manager of the Kingfisher Municipal Electric Light & Water Plant, and L. A. Pritchett, manager of the Marlow Municipal Electric Light Plant, each for two years.

Almost all of the large towns of the State were represented at the meeting. The annual meetings will be held alternately on the east and west sides of the State—that is, one meeting will be held in what was Indian Territory and the next in what was the Territory of Oklahoma.

According to the constitution and by-laws adopted, provision is made for three classes of members, namely, Class A, Class B and associates. The first isopen to managers and directors of companies; the second to other employees of the same; the third to anyone interested in the gas, electric or railway business or skilled therein, including the commercial men. Only the first-class members may hold office and vote. There is provision for advancement from Class B and associate membership to membership in Class A.

HEARING IN REGARD TO EIGHT-CAR ELEVATED TRAINS IN NEW YORK

The hearing before Commissioner Eustice, of the Public Service Commission of the First District of New York, in respect to the operation of eight-car trains on the elevated lines of the Interborough Rapid Transit Company was continued on Oct. 18, 1911.

Frank Hedley, vice-president and general manager of the company, said that five-car trains were the longest run on the elevated lines until electricity was installed, when six-car trains were placed in service. That was in 1903. Seven-car trains were first used in 1905 and had been continuously the maximum train since that time. Although the cars were reconstructed to withstand the strain of being operated in longer trains, instances were on record where the seven-car trains broke in two because the draft gear had pulled out or the longitudinal sills which support the draft gears and drawbars had let go. The public would not secure any increase in service with eight cars to a train as against seven cars with the present facilities.

Mr. Hedley did not concur in the view expressed by E. G. Connette, transportation engineer of the commission, that the service would be improved by a change in the present number of cars in a train from seven to eight, although fewer trains would be run. On the Third Avenue line the company had been unable to operate more trains on account of the physical limitations which were imposed. During the maximum traffic period on this line fifty-eight trains per hour were operated. The longer the interval between trains the greater the accumulation of passengers who desired to board at the center of the train, so that a frequent interval with seven-car trains accommodated the public better than a less frequent interval with the same number of cars in trains of eight cars.

The present equipment when loaded with passengers was not strong enough to be operated as eight-car units. In order to operate eight-car trains it would be necessary to reinforce the car platforms and car sills, put in new drawbars and draft gear and change the present control line. The air brakes might also have to be changed. Mr. Hedley would not assume the responsibility of running eight-car trains with present car equipment and structure.

The terminals were also all arranged for trains of not more than seven cars. There would also be trouble at the storage yards. During twenty hours out of the twenty-four seven-car trains were sufficient to provide every one with a seat. The total expense of making the necessary changes in the equipment would be about $10,000,000. From a practical railroad standpoint, without regard to the expenditure involved, the only thing to do to increase the facilities afforded the public over the East Side lines was to put in third tracks. If the city authorities would agree to abide by the decision of the Supreme Court vacating an order restraining the company from proceeding with the improvements to the elevated structure, the company would carry out the work of third-tracking the lines at once. It would probably cost $1,000,000 to third-track the Second Avenue and the Third Avenue elevated lines.

The hearing was adjourned until Oct. 24, 1911.

Operation of Near-Side Cars in Philadelphia

This Article Presents Some Observations on the Design and Operating Features of the New One-Platform Car Which Was Put in Service in Philadelphia on Sunday, Oct. 15

On Sunday, Oct. 15, the Philadelphia Rapid Transit Company placed forty-nine "near-side" cars in operation on its Twelfth and Sixteenth Street line. These cars are of the same general type as those recently installed by the International Railway Company at Buffalo, N. Y., and described in the Electric Railway Journal of June 24, 1911. They were built under the personal direction of T. E. Mitten, and the mechanical details were worked out by Ralph T. Senter. As described in the article on the Buffalo cars, a single inclosed front platform is used for all regular ingress and egress, while the rear of the car has an exit door for use in emergency only. This arrangement, of course, makes available for seats all the space formerly required for a rear platform, giving a seating capacity of fifty-three compared with forty in other prepayment cars of like dimensions. Other striking points which were mentioned in the previous article were the arch-roof construction, the methods of ventilation and sanitation, the safety features and the conveniences for the crew.

Acquainting the Public and the Employees with the Near-Side Car

Previous to the inauguration of the service, about 85,000 cards were distributed to the passengers on the route where the cars would be used. These cards were handed out by the conductors during the slack hours and by special agents during the rush hours. The card presented a plan of the new car, accompanied by directions on how to use entrance and exit. The card also requested passengers to be prepared to enter and leave the car at the near side of the street, to have exact fare ready for the conductor when boarding the platform, and to wait for the next car when the "car full" sign was displayed. No advertisements were printed in the newspapers, but the latter published long and favorable reading notices.

The motormen and conductors who were to handle the new cars were given a booklet which explained the principal features of the "near-side" car, the method of controlling passenger movement and the use of the special equipment. The conductors were further instructed by experts in the operation of the Dayton recording-fare registration system. This method of registration was described in the Electric Railway Journal of March 11, 1911. It provides for the registration of different classes of fares and prints an elaborate trip sheet, thereby relieving the conductors and the auditing department of much labor.

The Attitude of the Public

The new cars have not yet been in service under normal conditions for a sufficient length of time to obtain statistics on their operation. However, the Philadelphia public seems to have taken very readily to the "near-side" cars, so far as could be judged from extended observations at the principal corners and from conversations with the passengers themselves. Entrance to the car is facilitated by a long, curved grab-handle which is placed on one leaf of the entrance door and extends almost to the floor of the platform when the entrance door is open. The passenger must pass the conductor and deliver his fare before stepping into the body of the car. The longitudinal seats provided at the front for three window lengths on each side allow ample room for the entrance and exit of passengers. The fact that the aisle between the transverse seats is 31½ in. wide at hip height makes it easy for passengers to move through the car without jostling those who are standing in the aisle. The liberal aisle width is due partly to the general design of the transverse seat, the pedestal casting of which does not project more than ¼ in. beyond the edge of the seats, the car itself being no wider than the

Philadelphia Near-Side Car—View Showing Route and Destination Signs

Philadelphia Near-Side Car—Side View with All Doors Closed

prepayment car formerly operated on this line. A novel feature of the seat backs is a central ridge, which effectively keeps the two passengers in a seat from crowding each other. These seats have corner grab-handles, while straps are installed over the wider areas in the front and back of the car. The transverse seats are 34 11/16 in. wide, and are stationary, since the car is used for single-end operation only. The rounded seats at the back of the car appear to be as popular with riders as the regular transverse seats.

Philadelphia Near-Side Car—Emergency Exit at the Rear

The passengers have been quick to notice such conveniences as push buttons, the placing of the lamps over the center line of each row of seats, the roominess due to the arch roof and the entire absence of register and signal rods and cords. While the seating capacity of the car is fifty-three, the large areas for standing room make it possible to handle a total load of over 150 passengers, although the intention is, under normal conditions, to limit the load to eighty-three passengers, at which time the "car full" sign will be displayed.

OPERATING ARRANGEMENTS

The railing system on the front platform accomplishes the double purpose of dividing the ingress and egress lines of traffic and of protecting the motorman and conductor from all jostling. As the motorman has an air brake, his principal manual labor is the manipulation of the entrance and exit doors. These doors are of the two-leaf type and are operated with surprising quickness and little effort. A separate handle is provided for the independent opening or closing of each passage, but by the use of a through pin the motorman can manipulate both sets of doors together. The motorman is also provided with a mirror which reflects the car interior. At night he is cut off from reflected light by a curtain. The rear exit, which is used for emergencies, can be operated either by means of a lever manipulated by the conductor from his regular position, or from the back of the car. He can do this conveniently because the exit door is not blocked by a folding seat. The emergency door is not intended for use during regular service, but only for occasions like terminal unloading, for instance, or at other times when it would be desirable to clear the car in the quickest possible time.

As a rule the conductor remains at the front of the car, but provision is made for emergency conditions which would require his presence at the rear. For instance, he can replace the trolley from the rear, although all cars are equipped with trolley catchers. An emergency air brake is installed near the ceiling at the rear of the car for the use of the conductor when the car is being operated in the reverse direction. When so stationed he can transmit signals to the motorman by means of a push button. Should a car require pushing, the motorman can transmit bell signals to the conductor stationed at the rear.

A special form of "squeegee" is being developed to take off frost on the vestibule windows.

SANITARY FEATURES

It is apparent from an inspection of the car that a great deal of thought has been given to making it as sanitary as possible. There are no recesses, shelving or beading of any kind to catch and hold dust. Wherever sharp corners could not be avoided, pieces of rounded plate were inserted to make self-cleaning corners. The curve of the ceiling and the rounded molding of the advertising racks also will not catch dust. The heater panel is continuous to avoid recesses. The straps have sleeves of celluloid. The general ventilator and heater features of the cars have been described in the article on the Buffalo cars so that no special reference need be made to them here.

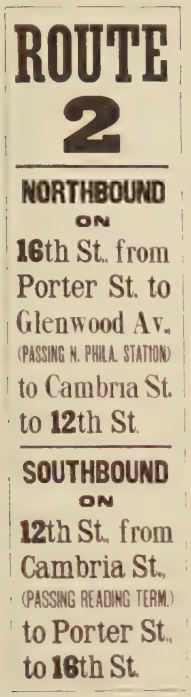
SIGN SYSTEM

The sign system which has been developed for the "near side" car is the result of a thorough analysis which was made of the type of signs to be used and the places where they should be displayed. In making this analysis the problems of exterior and interior signs were considered separately. It was believed that there should be displayed on the

Philadelphia Near Side Car—Motorman and Conductor in Position on the Front Platform

outside of the car information which would show both route and destination. The route itself is indicated by a large single illuminated numeral on the front of the car, supplemented by a sign over the exit and entrance step which gives the destination for the direction in which the car is traveling. On this particular line, for instance, the numeral "2" designates the route. It was also considered desirable to have an exterior sign which would give a complete description of the route, including the streets traversed, names of important points, such as railroad

terminals served by the line and the names of the terminals. The most convenient place for the sign was found to be in the vertical panel of the car near the front end.

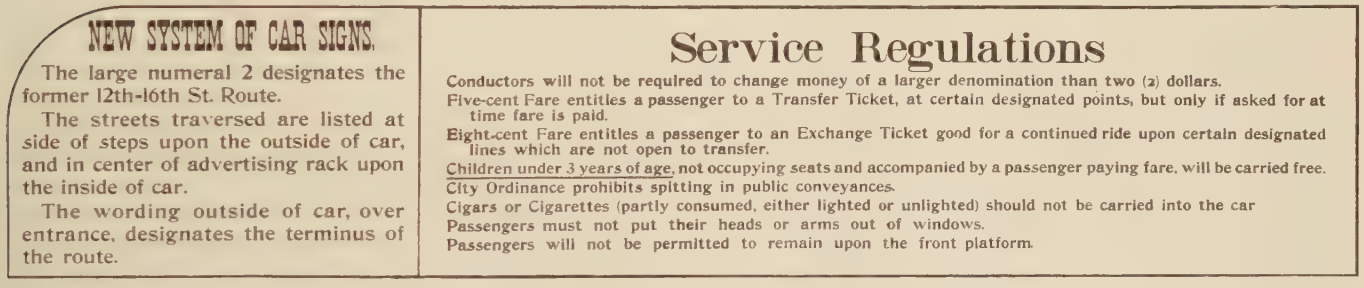


Outside Panel Sign

The position of the three exterior signs will be noted from the accompanying illustrations. The fourth exterior sign is the "Car Full" sign, which is displayed immediately below the route number. It might be added that numbers were chosen for routes in preference to letters for two reasons: First, in a large city, the number of routes would exceed the number of letters in the alphabet, and, second, certain capital letters like S and Z and T and I are likely to be confused at a distance. The text of the exterior panel sign referred to is reproduced in one of the accompanying cuts. It is divided into two sections because the line traverses different routes in going and returning.

The arrangement of the interior signs was directed by the thought that there should be a permanent place for each character of sign such that it could easily be read by every passenger without leaving his seat, and that the text of each sign should be so clear and concise that it would surely command attention and be fully understood. The interior signs are divided into three groups as follows: Information concerning route; service regulations; special announcements. The first two signs are placed in the regular advertisement racks in the center of the car while the other is placed in the arch directly above the conductor. The route sign is an exact copy of the exterior panel sign except that it is arranged horizontally. The "service regulations" sign contains in concise form the company's rules regarding the making of change, the issue of transfers and exchange tickets; safety regulations, such as that the passenger must not remain upon the platform, and should keep arms and head inside of the car; health regulations, such as prohibition of smoking and spitting. The complete sign is reproduced in one of the accompanying cuts. In this particular case the third sign, relating to special conditions, is used to describe the new system of car signs, but it may be used to make other announcements of temporary character. It may be mentioned in conclusion that the cars have the usual advertisement space except for the sections reserved for the route and service regulation signs.

Philadelphia Near-Side Car—Loading and Unloading Platform as Seen from Inside the Car


NEW SYSTEM OF CAR SIGNS.
The large numeral 2 designates the former 12th-16th St. Route.
The streets traversed are listed at side of steps upon the outside of car, and in center of advertising rack upon the inside of car.
The wording outside of car, over entrance, designates the terminus of the route.
Service Regulations
Conductors will not be required to change money of a larger denomination than two (2) dollars.
Five-cent Fare entitles a passenger to a Transfer Ticket, at certain designated points, but only if asked for at time fare is paid.
Eight-cent Fare entitles a passenger to an Exchange Ticket good for a continued ride upon certain designated lines which are not open to transfer.
Children under 3 years of age, not occupying seats and accompanied by a passenger paying fare, will be carried free.
City Ordinance prohibits spitting in public conveyances.
Cigars or Cigarettes (partly consumed, either lighted or unlighted) should not be carried into the car
Passengers must not put their heads or arms out of windows.
Passengers will not be permitted to remain upon the front platform.

Philadelphia Near-Side Car—Two of the Inside Signs

Philadelphia Near-Side Car—Seating Arrangement, Looking Toward the Back of the Car

CALIFORNIA CONSTITUTIONAL AMENDMENTS

As a result of a special election held in California Oct. 10 two amendments to the State Constitution relating to public utilities were adopted. One of these authorizes the Legislature to enlarge the powers of the State Railroad Commission and extend its jurisdiction to include all public service corporations, while the other authorizes municipalities to engage in certain utility work.

The first amendment declares that every private corporation and every individual or association of individuals owning or operating any commercial railroad, interurban railroad, street railway, canal, pipe line, telephone, telegraph or any equipment relating to such is a public utility, subject to control and regulation by the Railroad Commission.

By the second constitutional amendment any municipal corporation may establish and operate public works for supplying its inhabitants with light, water, power, heat, transportation, telephones or other means of communication.

By another constitutional amendment the Railroad Commission is increased from three to five members, to be appointed by the Governor, instead of being elective, as heretofore. The term is extended from four to six years.

ELECTRICAL FEATURES OF NEW YORK TUNNELS OF THE PENNSYLVANIA RAILROAD

On the evening of Oct. 18 a paper on "The Electrical Features of the New York Tunnel Extension of the Pennsylvania Railroad," by George Gibbs, chief engineer electric traction Pennsylvania Railroad, was presented at a meeting of the American Society of Civil Engineers held at the house of the society in New York City. This paper was printed in the *Proceedings* of the American Society of Civil Engineers for May, 1911, and was abstracted in the Electric Railway Journal of June 3, 1911, page 955.

Mr. Gibbs, the author of the paper, was detained in Europe and was unable to reach New York in time to present the paper in person. E. R. Hill, assistant to Mr. Gibbs, presented the paper in abstract in the author's absence, and illustrated the points to which he called attention by means of a large number of lantern slides. In concluding his presentation of the paper Mr. Hill gave some data on the operating features of the tunnels. The Pennsylvania began operating trains to and from the station on Nov. 27, 1910, and in the first ten months of operation the average number of train movements in and out of the station each day, including Long Island Railroad trains, was 430. The average number of locomotive movements per day was 290. The number of passengers carried by Pennsylvania Railroad trains was 31 per cent greater at the end of the ten months than during the first month after operation was begun. The increase in number of passengers carried on Long Island Railroad trains was 92 per cent. During the past seven months the passenger receipts of the Pennsylvania Railroad have increased 41 per cent, and the passenger receipts of the Long Island Railroad have increased 161 per cent. There have been no delays whatever to trains by reason of failures of the power supply in the power house or in the transmission system. There have been only three delays caused by current being off of one or more sections of the third rail. During the same period there have been only four locomotive failures causing delays to trains. The electric locomotives ran 189,000 miles per failure and the miles run per minute of train detention due to locomotive failures were 75,000.

A written discussion by J. Vipond Davies, chief engineer Hudson & Manhattan Railroad, was read in abstract. Mr. Davies called attention to the early history of the Pennsylvania Terminal Station project and its conception in the mind of Mr. Cassatt, president of the Pennsylvania Railroad. As early as 1901 Mr. Cassatt had some preliminary sketches made for a monumental terminal station to be located east of Fourth Avenue, where the local transit facilities would have been adequate. In Mr. Davies' opinion, much of the advantage accruing to the company from a direct entrance into New York City had been lost by changing the location to a site west of Seventh Avenue. There seemed to be but little hope for some years to come of providing convenient and adequate local rapid transit service to and from the station. Owing to the lack of suitable transit facilities he thought it was probable that not more than 5 per cent of the population of New York City knew where the station was or how it could be reached most quickly. Since the completion of the Newark Rapid Transit Line connecting Manhattan Transfer with the system of the Hudson & Manhattan Railroad, a quick and convenient means of transit to and from the down-town business section had been provided and the territory contiguous to the Sixth Avenue extension of the Hudson & Manhattan Railroad was reached more quickly by transfer to Hudson tunnel trains at Manhattan Transfer than by running through to the terminal station at Thirty-third Street and Seventh Avenue. The dividing line between equal running times via the Pennsylvania Station and the Hudson Tunnel trains was about Nineteenth Street.

W. J. Wilgus, formerly vice-president and chief engineer New York Central & Hudson River Railroad, sent a written discussion of the paper which was read by the secretary of the society. He called attention to a number of differences in the design of the Pennsylvania Terminal and the new Grand Central Terminal, both of which were designed to accommodate electrically operated trains. He deplored the absence of suitable rapid transit facilities to serve the Pennsylvania station and urged the construction of a subway as originally contemplated under Seventh Avenue. With reference to the plan adopted of building a large car-storage yard on Long Island, he pointed out the disadvantages from the standpoint of operating efficiency and cost of locating a storage yard such a long distance from the terminal station. He thought that large sums could well be expended for acquiring the necessary real estate for storage yards contiguous to the terminal, as had been done in the case of the new Grand Central Terminal. Mr. Wilgus compared the types of structures adopted by the Pennsylvania and the New York Central railroads for their terminal stations. The Pennsylvania terminal was a monumental structure devoted solely to station purposes and no income was obtained directly from the large investment in real estate which had to be made. One great advantage of the use of electricity in terminals was that it made possible the operation of trains on one or more levels below the ground, leaving the entire area above the surface of the ground available for any type of building which would produce an income from rentals. In his opinion the rents received from the large buildings which were being erected over the Grand Central Terminal yards would be a profitable investment and would almost pay the interest charges on the cost of the entire station improvements. One argument which had been used against the adoption of electricity as motive power was the excessive cost. To obtain equivalent facilities and still employ steam locomotives would cost a far greater sum than the change to electricity.

George R. Henderson, consulting engineer, New York, sent a written discussion on the design of locomotives for the Pennsylvania tunnels. He referred to their high center of gravity, which he considered advantageous as producing less strain on the track when running at high speeds. He described a simple method of obtaining the center of gravity of a locomotive by means of a track scale. If one side of the locomotive was elevated 6 in. or 8 in. and the weight on the other side was read from the scale beam, the height of the center of gravity could be determined with considerable accuracy by a simple trigonometrical calculation. This method was far more accurate than an analytical determination and much safer than the method sometimes employed of lifting the locomotive and determining its center of rotation.

E. B. Katte, chief electrical engineer New York Central Railroad, discussed the paper briefly. He said that the adoption of the direct-current system by the Pennsylvania Railroad was some indication that other companies which had adopted the direct-current system had not been far wrong. Referring to the section of the third rail adopted he thought that a third rail of equal carrying capacity but with a rectangular cross-section could have been rolled more easily and at less cost and that it would have afforded more convenient means for protection. The Pennsylvania electric locomotives, in his opinion, had no novel electrical features, but the use of side-rod driving connections was a novel mechanical construction about which he had some doubts as to its future efficiency. He thought it would be extremely difficult to keep the jack shafts in line after they began to wear in the bearings.

N. W. Storer, Westinghouse Electric & Manufacturing Company, described the conditions which influenced the design of the Pennsylvania electric locomotives. The entire

terminal project was predicated in the beginning on the use of electricity as motive power and safety and reliability were the first considerations. Cost was a secondary consideration, and no expense had been spared to make and maintain the locomotives as nearly perfect as possible. The record of operation of the locomotives exceeded that of any other type with which he was familiar, although they were called upon frequently to haul trains 50 or 60 per cent heavier than the trains which they were designed and guaranteed to haul. Grades in the tunnels were 2 per cent, and were equivalent to the grades encountered in mountain service. To start a 500-ton train on a 2 per cent grade required 40,000 lb. tractive effort, which was about equal to that exerted by large consolidation type steam freight locomotives. On account of the possibility of encountering bad rail conditions in the tunnel, the coefficient of adhesion had been limited to 20 per cent. This required a weight of 200,000 lb. on the four driving axles. The design of the tunnels would not permit concentrating such heavy wheel loads on a short wheel base, and an articulated type of locomotive was the final result of the attempt to meet these conditions. This type of locomotive was economical to build, as a few spare half-units were sufficient to provide for emergencies. The motors had a capacity large enough to handle trains of any weight up to the adhesion capacity of the driving wheels. In the preliminary tests of these locomotives drawbar pulls of as much as 79,200 lb. had been obtained, which corresponded to a coefficient of adhesion of 37 per cent. This was equivalent to the tractive effort of the largest Mallet compound steam locomotives. A coefficient of adhesion of 37 per cent was not unusual for electric locomotives with good wheels on perfectly clean, dry rail. The side-rod method of driving had been adopted only after careful study, as it was believed to be more reliable and safer than any other form of drive.

Personally, Mr. Storer said he was not in favor of side-rod driving, for the reason that it produced excessive stresses on the cranks and pins. In a steam locomotive each rod or pin was allowed to transmit the maximum power of only one cylinder, whereas all the power of the motor on an electric locomotive was transmitted through the connecting rod and pins on one side at certain points during each revolution. On the Pennsylvania locomotives, when exerting 79,200 lb. tractive power, it had been estimated that the crank pins were subject to a maximum stress of 120,000 lb.

COMMUNICATION

MR. CONNETTE'S OPINION ON HAND BRAKES

PUBLIC SERVICE COMMISSION, FIRST DISTRICT
NEW YORK, Oct. 16, 1911.

To the Editors:

In your issue of Sept. 23, under the heading, "Hearing on Brakes and Height of Car Steps in New York," in referring to my testimony, you say: "With the maximum traction trucks used in New York he thought that hand brakes were as efficient as air brakes."

This is incorrect; what I did say, as shown by the record, is: "The type of brakes which are used under the light double-truck cars in New York, equipped with maximum traction trucks, were probably as efficient with hand brakes as the single-truck car, but that would depend entirely on the weight of the car."

My answer was intended to cover the double-truck cars equipped with maximum traction trucks and weighing 25,100 lb. and less, which are equipped with geared hand brakes.

E. G. CONNETTE,
Transportation Engineer.

RESULTS OF THE TESTS OF FENDERS AT NEWTON, MASS.

Eight types of fenders for electric cars were tested under the direction of Commissioner George W. Bishop of the Massachusetts Railroad Commission, Oct. 10, at the Homer Street carhouse of the Middlesex & Boston Street Railway, in Newton, Mass. Seven dummies, made of canvas stuffed with rope and sand and representing, in size and weight, human beings from children to men, were placed in the positions of standing, sitting and lying upon the track, and run into at varying rates of speed. The fenders tested were mainly new devices, and all but one were of the same general type—tubing frame, with basket-like horizontal work. Several were supplied with buffers to take the shock of a person struck violently and hurled backward. The exception to the general style was a device resembling a cartwheel, suspended horizontally in front of the car. The inventor's idea was that a person struck would set the wheel revolving and so be pushed to one side of the track. The scheme worked fairly well with standing figures, but failed when the dummies were placed in a reclining position. The same may be said of a large number of the new devices. Either they were hung too low to permit of practical operation over inequalities in the roadbed, or, being raised to clear these, they rolled the dummy underneath the trucks instead of lifting it. One of the fenders was of a pattern manufactured by the Worcester Railway Supply Company, of which about 800 are in use in California. This type has in combination with it a wheel guard, which is relied upon to push the body off the track when the fender fails to lift it.

Several of the new inventions required the pressing of a lever by the motorman to drop the fender near the ground and so strike the object well below its center of gravity, but it appeared to be the general view that only an automatic device was practicable.

Among the fenders tested was one called the Libby basket fender, now in use on the prepayment cars of the Boston Elevated Railway. In conjunction with this, each of the two trucks of the car has a guard completely surrounding it. In theory this should be 2 in. above the rail, but conditions in the Boston district require it to be about 5 in. above the rail, though the roadbeds are being constructed so as to enable a fender and guard to be within 2 in. of the rail. This type of fender operated as satisfactorily as any shown. In cases where the figure was lying across the tracks and below the reach of the fender, the wheel-guard brushed it aside uninjured. President Bancroft of the Boston Elevated Railway stated:

"There are many good fenders that catch a person when directly in front of them, but few can push a body to one side, and then the wheel guard has to be relied upon to do it. Usually children playing in the streets become confused and turn about when the car is approaching. The average fender will do little in such cases, but the wheel guard such as is used on our new equipment is efficient."

Another test was to be conducted Oct. 19, when several more inventions were to be tried. The result of the investigations and trials will form a report which the Massachusetts Railroad Commissioners will make to the next Legislature. Commissioner Bishop has, the past summer, investigated the subject in European cities, and an agent of the commission is soon to make a trip West on the same errand.

Tracks of the Illinois Traction System will be connected with the two laboratories of the new transportation building at the University of Illinois for the construction of which the last General Assembly appropriated $200,000. One of these will house the locomotive testing apparatus and the other will contain the electrical testing machinery.

Annual Convention of the National Association of Railway Commissioners

This Convention Was Held in Washington on Oct. 10 to 13, and a Number of Subjects Relating to Electric Railways Were Discussed

The opening session of the twenty-third annual convention of the National Association of Railway Commissioners was held at Washington, D. C., on Oct. 10. R. Hudson Burr, of Florida, called the meeting to order.

Judson C. Clements, chairman of the Interstate Commerce Commission, in welcoming the members stated that by common consent of the people of this country and the courts, and practically by all, it was accepted of necessity by the interests to be regulated that there was constitutional authority for reasonable regulation and, in addition, a necessity for it. He said in part:

"There is a better recognition in late years of the clear distinction between meddling with private investments in a private enterprise and regulating the investment of private capital in a public-service corporation which is affected by the public interest. When a corporation takes the place of the state in any matter, it takes it subject to the principles of fairness and equality, non-discrimination in treatment and reasonable rates. There is a clear distinction in principle between that kind of regulation and that which would undertake to regulate the private business of a private investment in a concern not engaged in a service public in its nature.

"Under certain conditions to leave public-service corporations free for the most part to do as they choose results in combinations and monopolies in a service upon which every individual is of necessity dependent, not quite so much as he is for the air he breathes, but commercially absolutely dependent for transportation.

"It is a mistake, however, to suppose that the necessity for additional legislation will ever pass. There must be new laws to meet new conditions. I suppose that those who are in favor of such laws from time to time, although they advocate them with the purpose to do only that which is just, will always be characterized as unduly progressive or radical. We ought on the one hand not to be intimidated by that cry nor on the other hand to forget the right of the investor in these properties, but should go with an even hand, with a cold-blooded sense of justice, and do that which is right in the passage of laws and in their administration."

PRESIDENT'S ADDRESS

Chairman Burr, in the annual address of the president, referred principally to railway questions and to general matters bearing on their regulation. He said that when the findings of a railway commission are to pass under judicial review a local or state judge should first be called to the task and not until the judicial machinery of the state is exhausted should there be an appeal to the United States courts. He also took up the question of cost accounting and said that operating or accounting divisions of railroad companies should be made practically coincident with state lines and that even then certain terminal expenses should be projected over the state lines and made common to two or more states. A more intricate problem was presented in the division of the expenses between freight and passenger traffic. Mr. Burr thought that the only expenses which required more than common care in the division of accounts were those relating to maintenance of way and structures. President Burr recommended that the committee on classification of operating and construction expenses of electric railways be abolished and that its duties be combined with and performed by the committee on accounts and statistics of electric railways.

CONFERENCE BETWEEN SECRETARIES

At the morning session on Oct. 10 J. S. Kennedy, secretary of the New York Public Service Commission, Second District, suggested that as there had been some correspondence between the secretaries of the various commissions and several were in attendance conferences between them might be held to mutual advantage. A conference was therefore arranged.

EXPRESS RATES

The report of the committee on express service and express rates, which was read by Charles F. Staples, Minnesota Railroad & Warehouse Commission, quoted the officials of express companies who testified before the committee in reference to the general subject considered. The committee recommended for serious consideration a plan for a separation of rates so as to relieve patrons who did not care for the pick-up and delivery service from sharing in the cost of this service to the express companies. The committee believed that the low ounce rates in Section D of the classification were admittedly wrong and discriminatory, that such rates could not be justified and should be either eliminated or raised.

FUNCTIONS OF NATIONAL AND STATE GOVERNMENTS

On account of cases which are now being submitted to the United States Supreme Court bearing upon the respective functions of the governments of the states and the United States, the committee on amendment of the act to regulate commerce withheld recommendations until these questions should be settled.

DELAYS IN ENFORCEMENT OF ORDERS

The committee on delays attendant upon enforcing orders of state railroad commissions reported that there had been no serious delays in the state courts for many years and that judicial decisions and Section 17 of the Commerce Court act had minimized and measurably remedied the evil in the federal courts.

GRADE CROSSINGS AND TRESPASSING

The report of the committee on grade crossings and trespassing on railroads, presented by George W. Dickinson, Michigan Railroad Commission, stated in part:

"In some states the law permits, if it does not direct, the establishment of grade crossings. The public, when appealed to, readily agrees that something should be done, but when it comes to making that public bear a fair share of the expense of grade separation, even for its own protection, or making the unlawful use of railroad right-of-way a felony, it demurs and loses interest, and thus commissions, whose statistics continue to show great loss of life at such crossings, are impotent to effect a remedy. The people say, 'The railroads are the offenders, let them apply the remedy,' forgetful of the fact that the greater number of fatalities result from the use of railroad property by those who have no right thereon, or who fail to exercise a reasonable measure of caution in passing such crossings.

"The rapid increase in the construction and operation of interurban lines, the adoption of longer and heavier cars, and the increased speed at which they are operated in their attempt to compete successfully with the steam lines for other than local passenger traffic are operating as an added menace to human life at grade crossings; from the fact that their operation is more frequent, attended with less noise, and the sound of their whistle is not so loud and strong, the pedestrian or driver of a vehicle receives less notice of their approach and thus the crossing

at grade of electric lines is proving a greater source of danger, under ordinary conditions, than in the case of steam lines and must receive our special consideration.

"We believe that as to grade separation we should renew our efforts to have the Legislatures of our respective states pass a law requiring that each railroad operating therein should be required to eliminate a given number of grade crossings each year, and at such points as the commission having authority in such states shall direct, the expense to be apportioned between the state and county, township or village, as the case may be, and the railroad company, as the commission shall determine, believing that the varying conditions under which grades are separated do not make it advisable that any inflexible rule or statute shall govern as to the manner of division of expense; that the commission of the state in which such crossings are separated, making an inspection of the premises and being thoroughly conversant with the conditions, is in a better condition to determine the reasonableness of the apportionment of expense than any other body, legislative or otherwise. We also believe that whenever new highways are to be constructed crossing railroads, or new railroads constructed crossing existing highways, the point where such crossing shall be made and the manner of construction, whether over, under or at grade, should be determined by the commission, and that our state Legislatures should by prompt enactment so provide."

NEW OFFICERS

On Oct. 11 officers were elected for the ensuing year as follows: President, Charles F. Staples, Minnesota Railroad & Warehouse Commission; first vice-president, O. P. Gothlin, Public Service Commission of Ohio; second vice-president, H. Warner Hill, Georgia Railroad Commission; secretary, William H. Connolly, Interstate Commerce Commission; assistant secretary, William Kilpatrick, Illinois Railroad & Warehouse Commission.

TAXES AND VALUES

The report of the committee on railroad taxes and plans for ascertaining the fair value of railroad property was prepared by Edward M. Bassett, formerly a member of the New York Public Service Commission, First District. Mr. Bassett was the chairman of the committee. With one exception the report prepared by Mr. Bassett was approved by all the members of the committee. An abstract of this report will be published in a later issue.

STATISTICS AND ACCOUNTS

The report of the committee on statistics and accounts, of which Prof. B. H. Meyer, Interstate Commerce Commission, is chairman, was presented at the morning session on Oct. 12. The committee expects by vigorous action to be able to submit to the convention of 1912 a report of progress that will, if possible, embody a proposed plan relating to the division of operating earnings and expenses by state lines.

SAFETY APPLIANCES

The report of the committee on safety appliances, of which C. C. McChord, Interstate Commerce Commission, is chairman, was read by William Kilpatrick, Illinois Railroad & Warehouse Commission. The report said that recent disastrous railroad wrecks indicated the necessity of radical reforms in the practices and methods of railroad operation. In its work under the law of investigating the causes of railroad accidents the Interstate Commerce Commission could rely confidently upon the co-operation and assistance of the state railroad commissions. The committee thought that the association should go on record in favor of legislation of a general character providing for the introduction of steel cars gradually and should recommend similar legislation relating to intrastate carriers in the several states. It was recommended that the attention of railroad managers be called to the advisability of experimental trial in actual railroad operation of some of the automatic train stops upon limited divisions of the railroads with a view to working out, by service test, the best available train-controlling device.

RAILWAY CAPITALIZATION

Martin S. Decker, New York Public Service Commission, Second District, chairman of the committee on railway capitalization, presented the report of this committee. An abstract will be published in a later issue.

RATES AND RATE-MAKING

The principal subjects discussed on Oct. 13 were rates and rate-making; the powers, duties and work of state railway commissioners; the accounts and statistics of electric railways, and the report of the committee on railway capitalization.

On the subject of rates, Mr. McKnight, of Arkansas, called attention to the fact that the occasional rider, who was usually a laboring man in that State, paid about 3 cents a mile for his transportation, that commercial travelers, who required much more checking of baggage, traveled on a mileage book for 2 cents a mile, and that many lawyers and other individuals in the State traveled on passes. He considered this condition unjust. He also referred to certain freight rates which he considered discriminatory.

Mr. Watson, of Oklahoma, believed that if railroad rates were based on the value of the properties with depreciation deducted, rates could be established which would be sustained by the courts and would be satisfactory to the public and would give a proper return to the companies.

POWERS AND DUTIES OF COMMISSIONS

In the discussion of the powers, duties and work of state railway commissioners, Messrs. Hogueland, of Kansas, and Decker, of New York, mentioned briefly the scope of the powers of the commissions in those States.

In this connection the association voted to invite the representatives of the Railroad Commission of Canada to attend the next annual convention and participate in the discussions.

ACCOUNTS AND STATISTICS OF ELECTRIC RAILWAYS

When this subject was announced Mr. Bellamy, of Arkansas, said that he had originally been appointed chairman of the committee of the accounts and statistics of electric railways, but that he had been notified that the committee had been merged with the committee on statistics and accounts, so that he had prepared no report. As the Arkansas commission was strictly a steam railroad commission and had no jurisdiction over electric railways, he suggested that if an electric railway committee should be continued a chairman should be selected from among those commissions which had jurisdiction over electric railways. As there was no report on this subject from the committee on statistics and accounts it was passed over to the following year.

DISCUSSION ON RAILWAY CAPITALIZATION

Mr. Gothlin, of Ohio, in opening the discussion on this subject, said that the commission in that State was confronted with the problem of railway companies which already had a heavy burden of capitalization and required additional funds for needed extensions and wished to issue bonds. These companies had said that if the commission should require them to sell stock for full value or to issue stock before bonds were issued railway progress and construction in the State would stop.

Mr. Hill, of Georgia, said that the Georgia commission had jurisdiction over the public service corporations doing business within that State, but that several interstate railroads had declined to recognize its authority over their issues of securities.

Mr. Decker, of New York, said that most of the interstate railroads doing business in New York were New York corporations, and that the New York commission considered applications for their issues of securities. He thought that the only interstate railroad to which this statement did not apply was the New Haven Railroad, which, as yet, had not made any such application. In re-

gard to the compensation which should be allowed in the capitalization to promoters of new companies for their services, the New York commission had taken the position that promoters were entitled to compensation, but the commission had always taken testimony as to the value of these services, such as the length of time which the promoter had put on the work, what he had done and the expenses which he had been obliged to defray. These were considered as "preliminary expenses." Engineering services in preliminary surveys and the acquirement of rights-of-way were also included in the same account. He did not think that there was any wide discontent in New York with the way in which the subject of compensation for the services of promoters had been treated in that State by the commission. He added that under the law the commission was not permitted to allow the capitalization of franchises.

Mr. Benton, of New Hampshire, said that one of the difficult problems which the new public service commission of that State had to meet was that of determining the increase in capitalization which should be allowed a utility company which purchased the plant of a competing utility when a large part of the purchased plant was a duplicate of that owned by the purchaser, so that that part of the purchased plant had to be scrapped or was not of use to the purchaser.

Mr. Meyer, Interstate Commerce Commission and formerly a member of the Wisconsin commission, in replying to Mr. Benton said that the Wisconsin commission had generally taken the position that even though the aggregate of the securities outstanding might exceed the value of a plant in first-class condition, what the public required was good service, and what the company must have in order to give that service was money, and that the commission must do whatever it reasonably could do to put the company in a position where it could get money. His personal belief was that so far as possible every share of stock should stand for the amount of its face value, but it was not always possible to require that and not always in the interest of the public to do so. He asked whether it was not possible for the regulating authorities so to mold public opinion as to get out of the public mind that there was a definite and necessary connection between securities and rates. The authorization by a commission of the issue of a certain amount of capitalization carried no guarantee that the property was worth that amount of money. All that the commission could do would be to say that a certain amount had gone into the property. At any subsequent period the property might be worth more or less than that amount. On the subject of the approval of the securities of companies by the public authorities he also said in part:

"All of you gentlemen who are connected with state commissions regulating securities, I believe, act under laws that require approval on the part of public authority before the securities are issued. That is the Wisconsin law. And while I was a member of the Wisconsin commission, in common with my colleagues of the commission, I often asked the question, 'To what extent after all is it desirable that express sanction shall be given to the issuance of securities in advance? If that approval is given in advance of such issuance, does not the state thereby place a certain stamp of legitimacy and value upon stocks and bonds?'

"If in your state you value your properties, if you have a tax commission or some other authority that places a value upon that property, and you as railroad commissioners establish the rates, to what extent are you interested in the issuance of securities except as a question of public morals? You do not want fraud. You want to protect the investor as far as you can. You want to give him information in order that he may know what he is buying, but when you have given the investor the information that it is possible for you to give, can you do much more for him? If you establish rates it is within your power to see that the rates are reasonable.

"When we started out in Wisconsin we thought that previous approval was doubtless a very good thing, and it is a good thing in many respects, but I want to repeat that our doubt increased with our experience, and the greater our experience became the greater was our doubt. If you say bonds shall not be sold for less than 75 or 80, there is a great margin, a margin enough to allow all the latitude there ought to be."

Commissioner Lane, of the Interstate Commerce Commission, thought the laws which gave to commissions the power to determine in advance the figure at which bonds or stock should be sold were based upon a wrong theory. They were based upon the theory that the government had a direct interest in that matter, whereas it was the stockholder or the speculator who was interested in that question. But the government could say that the conditions of the sale and issue of securities should be a matter of public record, so that every stockholder and others and everyone who desired could have access to the records and know the amount of money obtained from such sale. The Supreme Court in the Smythe case had decided that the returns to be made to a railroad must be made upon investments made by the stockholders. Experience had shown that there was no real fixed relation between the amount of capitalization and values, but it was the duty of the commissions to know what the sales of securities yielded and whether that money went into the property which served the public. He did not believe that any state commissioner could say that a certain bond should bring say 85, or that a stock should be sold for 100, unless he knew of someone who was prepared to offer that amount for it. Hence, he suggested in the question of the control of capitalization the wisdom of going slowly and of finding, first, if it was not possible to achieve every result desired by publicity and by the exact and official ascertainment of the fact that the money which was raised went into the property.

Mr. Watson, of Oklahoma, said that the commission in that State had no jurisdiction over the issue of stocks and bonds but had the power to regulate rates. The rates were fixed after the commission had made an appraisal of the properties of the utility and had ascertained their true value, with an allowance for depreciation and interest.

INSTALLATION OF OFFICERS

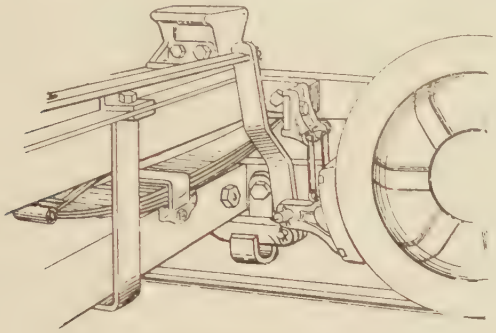
At the close of the session the officers for the ensuing year were installed.

The next meeting will be held in Washington, D. C., during the week beginning Nov. 19, 1912.

The Engineering Experiment Station of the University of Illinois, has issued Bulletin No. 49 entitled "Tests of Nickel-Steel Riveted Joints," containing the results of tests for slip and strength of 106 nickel-steel riveted joints and seventy chrome-nickel-steel riveted joints. The tests of nickel-steel joints were undertaken at the request of the board of engineers of the Quebec Bridge; and those of chrome-nickel-steel joints, at the request of the Pennsylvania Steel Company. Tests were made in tension and in alternated tension and compression. It was found that noticeable slip of rivet occurred at loads within the ordinary working stress; the slip was much greater under loads alternated in direction than under loads in one direction only, and the slip of joints seemed to depend on workmanship rather than on material. The nickel-steel and the chrome nickel-steel joints showed higher ultimate strength and much higher resistance to bending of rivet than did joints of ordinary structural steel. It would seem that in riveted joints designed on the basis of ultimate strength, the use of rivets and plates of nickel-steel may be of advantage, but that in riveted joints designed on the basis of frictional hold of rivets against slip, there is little advantage in using rivets of special steels of great strength.

IMPROVED TRUCK BRAKE RIGGING

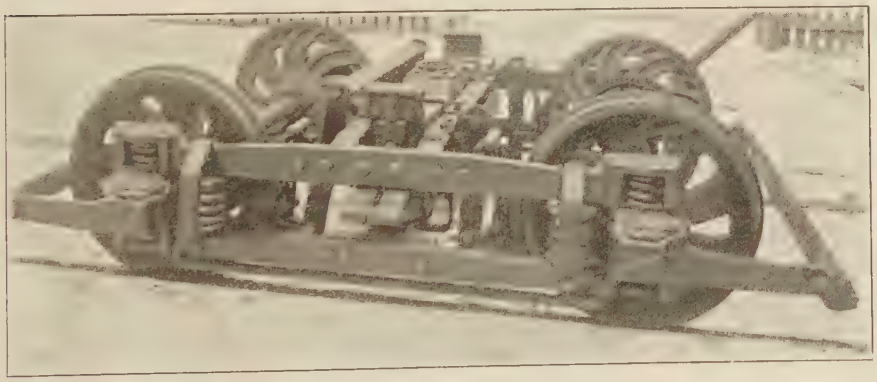
Martin A. Pahler, formerly master mechanic of the Connecticut Company at New Britain, Conn., recently has been granted a patent on an improved form of truck brake rigging which has been applied to a number of cars in New Britain. The principal advantages claimed for this improvement are simplicity and economy of construction and maintenance and a higher brake leverage. As will be



Improved Truck Brake Rigging

seen from the accompanying engravings, which show the rigging applied to a Brill No. 27-E truck, the brake shoes are inside-hung and the live levers are moved by a top brake beam at the center of which is attached the brake rod passing over the motor frame toward the center of the car body. The brake shoe hangers are attached to brackets bolted to the inside faces of the truck side frames. These hanger brackets have elongated bolt holes so that their position may be adjusted to give any desired angularity to the hangers. No release springs are used; the shoes fall away from the wheels of their own weight when the brakes are released. The live levers are bent inwardly to clear the hanger brackets and the two brake levers on each of the transoms are connected at their bottom ends by the rods to prevent the brake shoes from moving laterally across the face of the wheels. Since the point of attachment of the brake rod is closer to the center of rotation of the truck a radius bar and sheave are not required and the application of the brakes is as efficient on curves as on straight track.

By a simple modification of the rigging it can be adapted for providing a powerful hand brake entirely independent of the air brake. This is accomplished by increasing the length of the dead levers and connecting them at the top



Brake Rigging Applied to Brill Truck

with a top brake beam in exactly the same manner as the live levers. At each end of the car is mounted a long body brake lever pivoted near the center. The ends of these two levers are connected by rods under the sides of the car, and at diagonally opposite corners of the car one end of each body lever is connected to the hand brake shaft. On the same side of the pivot as the hand brake connection is fastened a rod connected to the center of the dead lever top brake beam. When the air brakes are applied the pull is toward the center of the car and the dead levers remain stationary against the transoms. When the hand brakes are applied the pull is toward the ends of the car and the live levers remain stationary. The hand brakes and the air brakes may be applied independently or simultaneously.

FUNICULAR ELECTRIC RAILWAY UNDER CONSTRUCTION NEAR DENVER

In connection with the development of Lookout Mountain Park, a new residential district and pleasure ground about 15 miles west of Denver, Col., a funicular railway to be operated by electricity is now under construction. The park is a tract of about 2500 acres lying above and south of the entrance of Clear Creek Cañon, behind the town of Golden. Its altitude is about 7400 ft., or about ½ mile higher than that of Denver, and it commands a view of the Continental Divide on the west and of the plains from Pike's Peak to Long's Peak on the south, east and north. The funicular railway begins about 1 mile from the center of Golden and in a length of 2600 ft. rises 1050 ft. The line is of the three-rail type, with a passing rail in the center, and two cars will be operated upon it. The maximum grade is 54 per cent for a distance of 300 ft., and the minimum grade is 36 per cent, this being the slope of the track at landings. The track is to be laid without horizontal curves, the rails being of 56-lb. T-section, and the track will be spiked to native ties laid 2 ft. apart on centers. At intervals of 100 ft. the track will be anchored with rods bolted to fishplates and set in concrete deadmen.

Electric power will be applied to the cars through a cable-hoisting equipment driven by a 112-hp, 2250-volt, three-phase, 60-cycle induction motor located at the top of the incline. The hoisting machinery will be provided with double-reduction gearing and will be mounted upon concrete foundations, the latter material also being used in the platforms of the stations. No belting will be used in the motor drive, and the principal drums will be two in number and each 6 ft. in diameter. Each car will seat seventy-two persons, and the two cars will be balanced sufficiently to act as mutual counterweights. The speed of hoisting will be about 300 ft. per minute, and the cars will be equipped with two 1¼-in. plow-steel cables, one of which is to be fitted with automatic grip and safety brake attachments. The cars are to be provided with grips on the outside rail, and carrying sheaves for the cable will be located at intervals of 100 ft.. The weight of each car loaded will be about 15 tons. An electric-bell system will be installed in connection with the starting and stopping of the machinery. Registers, gates and ticket offices will be provided at the landings, and it is estimated that the road can be operated by two engineers, two trackmen, two conductors and two gatemen. It is expected that the existing electric railway service between Denver and Golden will be extended to the foot of the incline and that commutation facilities will be inaugurated at the opening of the line in the spring of 1912, permitting the residents of the park to make the journey from their homes to the business center of Denver in about an hour.

The funicular railway is being built under the direction of Louis W. Vidler, civil engineer, the officers of the Lookout Mountain company being: President, Rees C. Vidler; general manager, L. F. Kimball; secretary and treasurer, W. W. Borst. It is expected that the opening of the railway will provide access to a community of mountain homes at present unrealized within practicable commutation distance of Denver. The company's headquarters are located at 620 Empire Building, Denver, Col.

SINGLE-TRUCK, ARCH-ROOF CARS FOR THE OKLAHOMA CITY TRACTION COMPANY

A rather interesting design of prepayment car is shown in the accompanying illustration of one of two cars recently delivered to the Oklahoma City Traction Company by the American Car Company, St. Louis. These cars are of the vestibule type, with flat arch roof, are 29 ft. 5 in. long over

Single-Truck, Arch-Roof Car for Oklahoma

all, and are mounted on Brill No. 21-E single trucks. The other dimensions of the cars are: Length of body, 20 ft.; width over the sills, 6 ft. 3 in.; width over all, 7 ft. 9 in.; height from rail to sills, 2 ft. 2⅝ in.; height of sill to trolley base, 8 ft. 10 15/16 in. The car body is built of wood with a semi-steel underframe, interior trim of cherry and headlining of three-ply birch veneer. Longitudinal rattan seats are used on both sides, but with a space opposite the third window on one side for a coal stove. The curtains are of pantasote and their fixtures were furnished by the Curtain Supply Company. The motor equipment of one car consists of two GE-80 motors and of the other car of two Westinghouse 92-A motors, both inside hung. The illustration shows the double folding door used on the exit side of the motorman's platform and the hinged covers for the step, the covers operating in unison with the doors.

AVIATION EXHIBITIONS FOR ELECTRIC RAILWAYS

The flights of C. C. Witner in a Curtiss hydro-aeroplane at the Atlantic City convention last week were witnessed with a great deal of interest by many electric railway managers and traffic officials who were present. David Daly, manager of the Houston (Tex.) Electric Company, was so impressed with the possibilities of such an exhibition as a means of creating traffic that he immediately entered into negotiations with the Curtiss Exhibition Company for an exhibition flight in Houston in November. During the past two weeks the Curtis Exhibition Company has contracted to give exhibition flights for the Indiana Union Traction Company at several towns along its lines, for the Salisbury & Spencer Railway, Salisbury, N. C., and for the Spartanburg Gas & Electric Company, Spartanburg, S. C.

That railway companies can profit largely by the general interest in aviation is shown by the remarkable success of the Long Island Railroad in promoting aviation meets on Long Island. The exhibitions at Belmont Park, Mineola and Garden City during the past year resulted in the railroad company carrying many thousands of people in addition to its regular traffic.

One of the reasons why aviation has not progressed more rapidly in this country is said to be the lack of suitable fields for giving exhibitions. Many of the larger cities throughout the country have had no exhibitions by aeroplanes because there was no suitable flying field in their vicinity. In several cities arrangements are being made to provide permanent aviation fields where experiments may be carried on and where flights may be made without danger to the aviators because of lack of room to maneuver their machines, thus forcing the aviators to make bad landings with resulting accidents. California is taking the lead in this matter and there is a serious effort being made on the part of the Aero Club of California to provide permanent aviation grounds not only to accommodate local exhibitions and local experimenters, but to serve also as stopping places on the great aerial highways of the future. Where there are no suitable fields for such purposes, but instead, a lake or river, the Curtiss hydro-aeroplane furnishes a fascinating spectacle for all those interested in aerial exhibitions and demonstrations of the utility of the aeroplane as a means of quick transportation in the future.

ELECTRIC LOCOMOTIVE FOR PORTLAND, GREY & LEWISTON RAILWAY

A Baldwin-Westinghouse electric locomotive was recently purchased by the Portland, Grey & Lewiston Railway Company. The locomotive is designated by the Baldwin Locomotive Works as one of Class 8-4/100, E-9. This classification indicates that there are eight wheels total and four motors per locomotive; E is a classification letter which denotes the number of driving axles; 100 stands for the horse-power of the motors, and the 9 means that it is the ninth locomotive built of its class.

Four No. 303-a Westinghouse motors with a gear ratio of 16:61 drive the locomotive and are controlled by an HL equipment. A feature of HL control that was one of the determining factors in its adoption for this service is the incorporation of a circuit-breaking device in the control equipment. The line-switch performs the functions of a circuit-breaker. The switch is controlled by a relay which operates whenever the current to the motors exceeds a predetermined value. There are several breaks in series and the arcing effect is distributed among them all, providing an effective breaking distance of several inches. This control has proved very satisfactory on a number of locomotives. The Portland, Grey & Lewiston locomotive is equipped with hand brakes and also with Westinghouse

New Electric Locomotive for Portland, Grey & Lewiston Railway

straight and automatic air brakes. It has a pilot at each end and switching steps and is equipped with M. C. B. automatic bumpers and couplers. The locomotive will be required to haul three trailers of five flat cars. The average number of cars to be handled in a train will be five, and the average weight of a loaded car will be 38 tons to 40 tons. The total length of the road is 35 miles.

The Selectmen of Brookline, Mass., have granted permission to the Boston Elevated Railway to use clean rock salt upon its ground rails, frogs and switches, and also upon rails on grades exceeding 2 per cent, during the coming winter, under such restrictions as the superintendent of streets may impose.

INTERURBAN CARS FOR THE NORTHERN TEXAS TRACTION COMPANY

The Northern Texas Traction Company, Ft. Worth, Tex., has lately received from the St. Louis Car Company four interurban motor cars of the design illustrated. The cars are single-end, straight-sided, vestibuled interurban motor passenger coaches, with the smoking compartment at the front end. A monitor ventilator roof (half-Empire type) with the regular steam coach type of hood is used, together with round-front inclosed vestibules at both ends and straight platforms with steam coach type of steps on each side of the rear and the right-hand side of the front platforms. These cars were designed for high-speed interurban service and are constructed for continuous operation at a speed of 60 m.p.h.

Exterior of Single-End Interurban Car for Ft. W orth, Tex.

The general dimensions are as follows: Length of body over the end panels at the sills, 40 ft.; length of front platform over the dasher, 5 ft.; length of rear platform over the dasher, 6 ft.; length over the dashers, 51 ft.; over the bumpers, 52 ft. The smoking compartment seats twenty-four and the passenger compartment thirty. All seats are stationary.

There are six longitudinal sills the full length of the car without splices. The two side sills are 3½ in. x 7¾ in. in size, reinforced with 6-in. channels; inside filler of 2½ in. x 6-in. yellow pine. All intermediate sills are 4½ in. x 6 in. in size, reinforced from buffer to 3 ft. beyond the bolster and plated on one side with ⅜-in. x 6-in. steel plate. The center sills consist of 6-in. I-beams with a 2¼-in. by 6-in. pine filler on each side. The cross framing is of oak, tenoned into the side sill fillers, intermediate and center sill

Interior of Ft. Worth Interurban Car.

fillers. At each cross sill there are tie rods with turnbuckles in the centers. All cross framing wherever it comes against steel plates is fastened with angle iron. The end sills are of oak and are tenoned into longitudinal timbers, in the same manner as the cross sills, and are reinforced on the inside by "U"-irons. These "U"-irons are bolted to end sills and longitudinal timbers. The cars have a steel undertruss.

The side of the car is framed for seven pairs of double Pullman style sashes per side. The oval top sash is stationary with sectional window sills, and the upper sash extends over the two lower. The windows are arranged to raise. All doors are of solid mahogany and glazed with plate glass. The interior finish is Honduras mahogany. The ceilings are semi-Empire 3/16-in. hard English agasote. The trimmings are of heavily oxidized solid bronze. There are window guards at all side windows and end windows. The curtains are of green silk pantasote with Hartshorn rollers and Forsyth fixtures.

The platforms are a continuation of the bottom framing. The front steps are 25-in. lengths and the rear steps 36-in. The height from the top of the rail to the top of the tread of the first step is 17 in.; height from the top of the rail to the top of the second step, 29 in.; height from the top of the rail to the top of the third step, 40 in.; height from the top of the rail to the top of the platform floor, 51 in. The brake staff, which is on the front platform only, is provided with the St. Louis Car Company's 21-in. vertical bronze wheel. The drawbars are the Van Dorn type; the window fixtures, O. M. Edwards Company. Each end has a Hedley anti-telescoping buffer and a 12-in. rotary foot gong under each platform. Other equipment includes the No. 16 Wagenhals headlight, No. 5 Knutson retriever, Adams & Westlake oil signal lamps, and twenty-four Consolidated type 93 heaters per car.

The single, swing-door partition of the smoking compartment is placed back six windows from the front end of the car. Bronze guards and foot rests are provided in front of the seat next to this partition to prevent passengers from marring the interior finish. The saloon is located at the rear left-hand corner and occupies one window opening. Its door swings outward. This saloon is fitted with a Duner sanitary water closet. The flush tank is of mahogany lined with 1/16-in. copper and has a capacity for a run of 70 miles without refilling. There are thirteen heavy bronze parcel racks per car. The water cooler is of galvanized iron, nickel-plated.

All wire is placed in conduit and all switches are installed in transite-lined switch cabinets. A box for the motorman's tools is provided by utilizing the space under the removable top of a longitudinal corner seat.

An electric rack inclined railway has been placed in operation in Lago Maggiore, Italy. It rises from Stresa to the summit of Mottzrone at an altitude of 5000 feet.

News of Electric Railways

Progress Under Receivers in Kansas City

R. J. Dunham, who with Ford F. Harvey is receiver of the Metropolitan Street Railway, Kansas City, Mo., is quoted as follows in an interview in which he referred to the demands made by the city for increased service and the carrying out of certain improvements at this time:

"There is little I can say until after we hear from the court relative to the petition which has been filed by the city. I propose to do all in my power to maintain the system in its entirety so far as the finances and revenues at our command will allow. It is not within my province to dwell on the reports of a possible dismemberment of the system. We will try to avert such a thing, but we are confronted by conditions which may overwhelm us. To be receiver of a corporation that is financially embarrassed and hounded by demands that are both financial and physical impossibilities is a hard row to hoe. We want to do what is right by the public, and are bending every effort in that direction. Our policy is to do the square thing by Kansas City, and we will go to the limit. There is an end, however, to all things and we may have to seek quarter. The Metropolitan Street Railway has overreached its credit. It must be sustained by its present revenues, and it remains to be seen whether these will be ample to weather the financial storms. Personally I do not believe they will."

Frank Hagerman, counsel for the receivers of the company, is quoted as follows in regard to the plan of the commissioners of Wyandotte County and the drainage board to rebuild the James Street bridge, the elevated bridge, the Kansas Avenue bridge and the Argentine bridge, and require the Metropolitan Street Railway to pay one-half of the cost of these improvements:

"A law which makes such an arbitrary, unfair and unreasonable exaction is illegal, and the Metropolitan Street Railway could never be required to pay more than the court would say was its reasonable proportion, but if now legally required to pay one-half, or contract therefor, the receivers haven't the funds to expend for this purpose.

"The public authorities erroneously conceive, however, that without the consent of the court which appointed the receivers they can at their expense tear down the James Street bridge, which was built wholly with money supplied by the company, stop street car traffic, and after the reconstruction of the bridge keep the street railway off the structure until it pays one-half the cost.

"The receivers are acting for the court; the tracks cannot be disturbed nor the movement of the cars stopped for one moment except with the consent of the court or under such conditions as the court may prescribe. If the commissioners wish to build the bridge and take their chance of recovering one-half the costs from the street railway, there is no necessity of stopping any traffic; temporary parts of a structure can be from time to time provided for at the side of the work so cars can be kept moving at all times while the bridge is being constructed. The public need not for one moment be alarmed about the stoppage of street car traffic over the James Street bridge."

Cleveland Chamber of Commerce Approves Franchise Amendments

The Chamber of Commerce of Cleveland has approved the amendments to the Tayler franchise by the City Council, and the amendments will be voted upon at the fall election, although there were some departures from the recommendations made by that body originally. The committee on street railway franchises of the chamber had been at work on the matter for some time and there was some doubt as to whether or not the amendments would be approved. Among other things the report of the Chamber of Commerce says:

"We find that the amendments to the Tayler franchise, passed by the City Council in July, in the main, are in accord with recommendations made by your committee.

"While the committee disapproves of some departures from the recommendations submitted, it is unanimously of the opinion that under all the circumstances the ordinance should be approved at the referendum election to be held Nov. 7.

"The purposes sought to be accomplished by the amendments in a general way are:

"First—To vest power in the city to control expenditures for renewals and replacements.

"Second—To give the city the right to compel expenditures for necessary extensions and betterments until the franchise has less than fifteen years' duration.

"Third—To correct manifest and conceded errors in the ordinance in provisions relating to security of capital at the expiration of the grant. The only effect of this correction is to make the ordinance mean what the representatives of the city in the negotiations conducted before Judge Tayler have publicly stated it was originally intended to mean.

"If the amendments are approved at the referendum, the railway company will be compelled to expend immediately $2,500,000 for such extensions and betterments as the city may determine are most needed at this time. If the City Council shall decide, as we believe it will, that this expenditure should be made for the purchase of additional cars and to increase the capacity of the company's power plant, there should be available in the near future facilities which would tend to relieve greatly the present congestion."

The report is signed by the following members of the committee: F. H. Goff, chairman; D. C. Westenhaver, James R. Garfield, Warren S. Hayden, H. H. McKeehan, George B. Siddall, H. W. Stecher and Warren S. Stone.

Owing to the opposition which will be made to the amendments to the Tayler franchise at the election, a local paper has summarized the amendments and named those favorable to the city. The amendment which changes the price to be paid for the property by the city provides that the city shall pay the capital value at the end of twenty-five years, instead of the appraised value plus 10 per cent. as provided in the original grant. The changes supposed to favor the city follow:

"1. As soon as the amendments may be approved the company agrees to spend $2,500,000 on such improvements as the city shall designate. It probably would mean new cars and tracks and additional power.

"2. Under the original grant the company has the power only to initiate improvements. Under amendments the city has the right to initiate improvements so long as the franchise has fifteen or more years to run.

"3. Under the original grant the company has the sole right to determine how the maintenance fund shall be expended. The city controls the expenditure of maintenance money under the amendments.

"4. The amendments give the City Council the right to extend the city rate of fare to that part of Cleveland which was Collinwood."

Statement in Regard to Personnel of United Railroads of San Francisco

Patrick Calhoun, president of the United Railroads, San Francisco, Cal., has authorized the following statement in regard to the election of Mason B. Starring as president of the United Railways Investment Company, San Francisco, Cal., of which mention was made in the Electric Railway Journal of Oct. 14, 1911:

"The election of Mason B. Starring as president of the United Railways Investment Company in no way affects the policy or the personnel of the officials of the United Railroads of San Francisco. Nor does it affect in any way my interests in the company. Ernest Thalmann's resignation does not mean any change whatever in the control of the United Railways Investment Company, but is due solely to personal considerations entirely removed from the affairs of the United Railroads of San Francisco."

Mr. Calhoun has been elected chairman of the board of directors of the United Railways Investment Company. Thornwell Mullally, who has been assistant to President Calhoun, of the United Railroads, will, in the absence of Mr. Cahoun, continue as acting president.

Hearings on Boston & Eastern Railroad Locations in Lynn

Two public hearings on petition of the Boston & Eastern Railroad for location in Lynn, Mass., have been held in that city. At both meetings the representatives of the General Electric Company stated that the proposed route would prevent the company from making contemplated enlargements to the plant. Several citizens objected to the changes from subway to elevated structure that are called for by the plans for construction through Lynn. The road wishes to run its tracks through the eastern section of the city, at an elevation of 14 ft. above the street, entering a tunnel under High Rock, which would be 160 ft. beneath the summit of the hill. The plans call for an open cut and "semi-tunnel" through West Lynn, coming to the surface near the General Electric Company's works.

Edward B. Breed, instructor in mechanical drawing and descriptive geometry at the Massachusetts Institute of Technology, presented plans which he claimed would obviate some objections raised, and at the same time save money to the road. Mr. Breed would provide for a tunnel under Lynn Common, instead of a cut or semi-tunnel.

At a subsequent hearing a few days later Starr Parsons, counsel for the Bay State Street Railway, stated that that company intended to erect a large carhouse on property on Western Avenue, near the General Electric Company's works, but that if the route of the Boston & Eastern Railroad were granted as asked it would be unable to build as planned. Attorney Benjamin N. Johnson, for the General Electric Company, declared that his company was not opposed to the Boston & Eastern Railroad in any way, but did object to being hindered in developing its plant by having the road located on its land.

Improvements in Pittsburgh

A conference was held in Pittsburgh, Pa., on Oct. 12, 1911, in regard to proposed improvements by the Pittsburgh (Pa.) Railways, at which the officers of the company, Mayor William A. Magee and members of the Council were in attendance. Following the meeting it was announced that the plans of the company in detail would probably be made public in thirty days. J. D. Callery, president of the Pittsburgh Railways, and Patrick Calhoun, president of the United Railroads of San Francisco, were quoted after the meeting. Mr. Callery is reported to have said: "I can say that the outlook is exceedingly bright, not only from the standpoint of the city, but from our viewpoint as well. I think we arrived at a basis of understanding that will be satisfactory to everyone concerned. It will be impossible for me to announce definite plans at this time, however."

Strike on Trenton, Bristol & Philadelphia Street Railway

Practically all of the motormen, conductors, carhouse men, power house men and linemen of the Trenton, Bristol & Philadelphia Street Railway, Philadelphia, Pa., are involved in the strike of the employees of that company which was declared on Oct. 1, 1911. The men originally demanded an increase in wages of from 21 cents an hour to 25 cents an hour for conductors and motormen, 15 per cent advance for all other employees and recognition of the union, but after several conferences between committees of the men and officials of the company the men were convinced that the company was paying them all it could afford at the present time. The men received two increases in pay during the last two years, amounting in all to 2½ cents an hour. The men, however, insisted that the union should be recognized, but the company refused to accede to this demand. During the last two weeks the company has maintained the regular schedule during the daytime, but has made no attempt to operate at night on account of disorder in and near Bristol, Tullytown and Morrisville. The local authorities being unable to cope with the situation, three members of the State Police are patrolling a part of the line. On Oct. 16, 1911, the company replaced most of the strike breakers, who have been operating the cars, with local men, a number of whom are old employees who decided to return to work.

Municipal Ownership in Winnipeg Deferred.—The special committee of the City Council of Winnipeg, Man., to which the question of the purchase of the property of the Winnipeg Electric Railway by the city was referred, has decided that nothing further should be done in the matter at this time. As stated in the Electric Railway Journal of Sept. 30, 1911, page 546, wide difference of opinion existed in the Council over the terms of purchase of the property.

Validity of Oklahoma City Traction Company's Ordinance Sustained.—Through a typographical error in the item "Validity of Ordinance Granting Franchise Sustained," which appeared in the Electric Railway Journal of Oct. 14, 1911, page 885, it was stated that the Supreme Court of Oklahoma on Sept. 26, 1911, had sustained the franchise of the Oklahoma Railway. The name of the company should have been reported as the Oklahoma City Traction Company.

Railway Supply Manufacturers' Association.—A meeting of the executive committee of the Railway Supply Manufacturers' Association will be held at the Belmont Hotel, New York, N. Y., on Oct. 24, 1911, at 9 a.m. Upon the same date a joint meeting of the executive committees of the Master Car Builders' Association and American Master Mechanics' Association will be held at the same place. The joint committees will decide at that time the place for holding the 1912 convention of the two latter associations.

Des Moines Arbitrators Named.—In the Electric Railway Journal of Sept. 23, 1911, mention was made of the selection of N. T. Guernsey, of Guernsey, Parker & Miller, lawyers, to represent the Des Moines (Ia.) City Railway as a member of the board of arbitrators which is to consider the differences between the company and its employees, and the selection of A. L. Urick, president of the State Federation of Labor, to represent the men. The third member of the board is John A. Guiher, an attorney.

Geary Street Municipal Railway.—The temporary injunction granted on Sept. 12, 1910, by the United States Circuit Court in favor of the United Railroads of San Francisco, restraining the county and city of San Francisco from attempting to build an electric railway for seven blocks on Market Street between Embarcadero Street and Geary Street and for nine blocks along Point Lobos Avenue from Thirty-second Avenue to Cliff Avenue, has been dissolved by the United States Court of Appeals on the ground that the United States Court has no jurisdiction in the case.

Tunnel Being Considered in Providence.—Plans for a tunnel for street cars under Prospect Hill, in Providence, R. I., are being considered in that city and may come before the city government for action. The project is substantially the same as that proposed by a committee appointed to consider the matter in 1907. The plans call for a double-tracked tunnel 1800 ft. long, to extend from North Main Street to Thayer Street, where it is proposed to connect with the lines of the Rhode Island Company operating on Waterman and Angell Streets. The line of the bore follows that of Fores Alley, a lane owned by the city, but not maintained as a public highway. The commission believes that by pursuing that route little damage to property above ground will result. The estimated cost of the tunnel and changes in street approaches is $750,000.

PROGRAM OF ASSOCIATION MEETINGS

Meeting of Central Electric Traffic Association

The next regular meeting of the Central Electric Traffic Association will be held in Indianapolis, Ind., on Oct. 23, 24 and 25, 1911, for the transaction of routine business.

Meeting of New England Street Railway Club

The regular monthly meeting of the New England Street Railway Club will be held at the American House, Boston, on Oct. 26, 1911. Dinner will be served at 6.30 o'clock p. m. At 8 o'clock the regular business meeting will be held, after which J. H. Neal, general auditor of the Boston Elevated Railway and former president of the New England Street Railway Club, will address the club, speaking of the recent Boston Chamber of Commerce European tour.

Financial and Corporate

New York Stock and Money Markets

October 18, 1911.

United States Steel has been the center of a selling movement this week. Rumors of a government suit against the corporation were widespread on Tuesday, but a denial was made by the Attorney-General, who stated that no steps have been taken in the matter. In to-day's market Steel declined about 1¾ points. Trading in general has been irregular, largely professional, and in small volume. Advance in sterling rates took place early in the week. Quotations in the money market to-day were: Call, 2⅜@2½ per cent; ninety days, 3½@3¾ per cent.

Other Markets

The Philadelphia market was stronger to-day than it has been for some time, and general improvement in prices was made. Traction shares were prominent in the trading in Chicago to-day, and the Series 2 participation certificates of the Chicago Railways Company gained close to four points, reaching 30⅞.

Rumors that the Western Telephone Company is to be absorbed by the American Telephone & Telegraph Company were responsible for activity in these shares in Boston to-day. Trading in Western was heavy and an advance of over five points was gained by its preferred and common stock.

Prices were generally higher in the Baltimore market to-day.

Quotations of traction and manufacturing securities as compared with last week follow:

	Oct. 11.	Oct. 18.
American Light & Traction Company (common)	a303	a295
American Light & Traction Company (preferred)	a108	a106
American Railways Company	a44	a43½
Aurora, Elgin & Chicago Railroad (common)	*43	a42½
Aurora, Elgin & Chicago Railroad (preferred)	*87	a87
Boston Elevated Railway	a126	126
Boston Suburban Electric Companies (common)	a15	15
Boston Suburban Electric Companies (preferred)	a75	72
Boston & Worcester Electric Companies (common)	a12	12
Boston & Worcester Electric Companies (preferred)	a51	*51
Brooklyn Rapid Transit Company	74½	74⅝
Brooklyn Rapid Transit Company, 1st ref. conv. 4s	84⅛	84⅛
Capital Traction Company, Washington	130½	a130
Chicago City Railway	a185	a180
Chicago & Oak Park Elevated Railroad (common)	3	3
Chicago & Oak Park Elevated Railroad (preferred)	6	6
Chicago Railways, ptcptg., ctf. 1	a95	91
Chicago Railways, ptcptg., ctf. 2	a28½	a31
Chicago Railways, ptcptg., ctf. 3	a10	a11
Chicago Railways, ptcptg., ctf. 4	6⅜	a7
Cincinnati Street Railway	a131	a131
Cleveland Railway	100	a99½
Columbus Railway (common)	83	83
Consolidated Traction of New Jersey	a75	a75
Consolidated Traction of N. J., 5 per cent bonds	a104	a104
Dayton Street Railway (common)	a25	a25
Dayton Street Railway (preferred)	a101	a101
Detroit United Railway	a73⅛	68
General Electric Company	150	151
Georgia Railway & Electric Company (common)	a162	a160
Georgia Railway & Electric Company (preferred)	a93	93
Interborough Metropolitan Company (common)	14⅞	14⅜
Interborough Metropolitan Company (preferred)	45	44
Interborough Metropolitan Company (4½s)	79	79½
Kansas City Railway & Light Company (common)	a17	a19
Kansas City Railway & Light Company (preferred)	45	a44
Manhattan Railway	a136	136
Massachusetts Electric Companies (common)	a19⅞	*19⅞
Massachusetts Electric Companies (preferred)	a93	*93
Metropolitan West Side, Chicago (common)	*27	27
Metropolitan West Side, Chicago (preferred)	*75	75
Metropolitan Street Railway, New York	*8	8
Milwaukee Electric Railway & Light (preferred)	*110	*110
North American Company	67½	a68
Northern Ohio Light & Traction Company	a55	a57
Northwestern Elevated Railroad (common)	30	*30
Northwestern Elevated Railroad (preferred)	70	*70
Philadelphia Company, Pittsburgh (common)	50	49¾
Philadelphia Company, Pittsburgh (preferred)	42¼	42
Philadelphia Rapid Transit Company	21½	23½
Philadelphia Traction Company	a83	83½
Public Service Corporation, 5% col. notes (1913)	*94	*94
Public Service Corporation, ctfs.	103½	103½
Seattle Electric Company (common)	a110	*110
Seattle Electric Company (preferred)	100	101
South Side Elevated Railroad (Chicago)	95½	a95⅛
Third Avenue Railroad, New York	9[illegible]	9
Toledo Railway & Light Company	6[illegible]	*6[illegible]
Twin City Rapid Transit, Minneapolis (common)	*106[illegible]	*106½
Union Traction Company, Philadelphia	50	51
United Ry. & Electric Company (Baltimore)	*18	*18
United Rys. Inv. Co. (common)	30[illegible]	33
United Rys. Inv. Co. (preferred)	58[illegible]	56
Washington Ry. & Electric Company (common)	a40	a41
Washington Ry. & Electric Company (preferred)	a80	a90
West End Street Railway, Boston (common)	86[illegible]	86
West End Street Railway, Boston (preferred)	a101	100½
Westinghouse Elec. & Mfg. Co.	61⅝	64¼
Westinghouse Elec. & Mfg. Co. (1st pref.)	a115	a120

a.Asked. *Last sale.

Property of the Erie-Cambridge-Union & Corry Traction Company for Sale

In order to close up an estate which holds a controlling interest, the entire property of the Erie-Cambridge-Union & Corry Traction Company has now been placed in the hands of H. C. Allen, vice-president, to dispose of at once. This property is said to be in shape to commence further building operations and a small cash outlay would be taken in payment, the balance to be accepted in bonds of the company.

The proposed line connects Erie, Pa., which has a population of 75,000, with Waterford, Mill Village, Miller's Station, Cambridge Springs, LeBœuf, Union City, Elgin and Corry, and is approximately 42 miles in length, 36 miles over private right-of-way, 22 miles already graded. The sum of $56,000 has already been expended upon the property and there is said to be no indebtedness against the company. There is an estimated population of 150,000 people located on and adjacent to the line.

Engineers' estimates, surveys, maps and detailed information can be had by communicating with H. C. Allen, vice-president, Erie, Pa., or by applying at the office of the company in Erie.

American Traction & Power Company, Indianapolis, Ind.—This company has been organized to finance, build and operate electric and steam railways in Kentucky and the Southern States. It is further stated that the company is a holding corporation to control the Kentucky Southwestern Railway, Light & Power Company, which proposes to build about 140 miles of line from Paducah, Ky., to Union City, Tenn. It will also control the Yazoo Valley Electric Railroad, Light & Power Company in Mississippi, which will build from Yazoo City to Canton. The officers of the company are: H. C. Brubaker, Indianapolis, president; E. F. Wheaton, Henderson, Ky., vice-president; G. E. Bruce, Indianapolis, Ind., secretary, and H. P. Dew, Blacksburg, S. C., treasurer.

Chicago & Milwaukee Electric Railroad, Chicago, Ill.—Judge Peter S. Grosscup in the United States Circuit Court at Chicago has fixed $200,000 as the maximum amount to be allowed the attorneys, trustees, and fees for counsel for former receivers of the Chicago & Milwaukee Electric Railroad. Altogether the court has been asked to allow about $235,000 in fees.

Bloomsburg, Millville & Northern Railway, Bloomsburg, Pa.—The Bloomsburg, Millville & Northern Railway has been incorporated in Pennsylvania with a capital stock of $250,000 to succeed the Bloomsburg & Millville Street Railway, the property of which was sold under foreclosure recently to D. O. Coughlin and Walter A. Hughes as a result of proceedings instituted by the Commonwealth Trust Company, Harrisburg, Pa. The authorized issue of bonds of the new company is $225,000.

Colorado Light & Power Company, Cañon City, Col.—H. M. Byllesby & Company, Chicago, Ill., who recently purchased the property of the Pueblo & Suburban Traction & Lighting Company, have acquired the property of the Colorado Light & Power Company.

Lehigh Valley Transit Company, Allentown, Pa.—The voting trust agreement of the Lehigh Valley Transit Company expired on Oct. 16, 1911, and Brown Brothers & Company, Philadelphia, Pa., as agents, are receiving the voting trust certificates for transfer for stock certificates.

Montreal (Que.) Street Railway—At a special meeting of the shareholders of the Montreal Street Railway on Oct. 4, 1911, the transfer of the company's property to the Montreal Tramways Company was approved. The Public Service Corporation, the Montreal Park & Island Railway and the Montreal Terminal Railway will also be included in the merger and transferred to the Montreal Tramways Company. The terms of the transfer provide that the shareholders of the Montreal Street Railway shall receive in exchange for each share of stock of the Montreal Street Railway $87.50 cash, $160 of 5 per cent debenture stock and $20 of common stock in the Montreal Tramways Company. An alternative proposition provided for the exchange of $250 of debenture stock and $20 of common stock for each share of stock of the Montreal Street Railway. E. A.

Robert, president of the company, announced at the meeting that $10,000,000 worth of debenture bonds bearing 5 per cent interest had been sold to N. W. Harris & Company, at 95 and interest, to take up the outstanding issue of stock.

Quebec Railway, Light & Power Company, Quebec, Que.—J. M. McConnell, Montreal, has resigned as a director of the Quebec Railway, Light & Power Company. Three residents of Paris are to be elected to the board of directors to represent the holdings of French investors.

St. Johns Light & Power Company, St. Augustine, Fla.—The property of the St. Johns Light & Power Company, which includes 10 miles of electric railway, has been sold under foreclosure to interests said to represent the Inter-City Securities Company.

United Railways & Electric Company, Baltimore, Md.—It is announced that the Safe Deposit & Trust Company, Baltimore, Md., will pay the following bonds of the United Railways & Electric Company and its subsidiaries: At maturity on Nov. 2, 1911, $2,000,000 of the first mortgage 5 per cent bonds of the Baltimore City Passenger Railway and $500,000 of 4½ per cent certificates of indebtedness of that company; $85,000 of Series B car trust certificates of the United Railways & Electric Company, and $35,000 of Series A car trust certificates of that company, which matured on Oct. 1, 1911.

Dividends Declared

Grand Rapids (Mich.) Railway, quarterly, 1¼ per cent, preferred.

Havana (Cuba) Electric Railway, quarterly, 1½ per cent, preferred; quarterly, 1½ per cent, common.

Montreal (Que.) Street Railway, quarterly, 2½ per cent.

Railways Company General, New York, N. Y., quarterly, 1 per cent.

MONTHLY ELECTRIC RAILWAY EARNINGS

BATON ROUGE ELECTRIC COMPANY.

Period.			Gross Revenue.	Operating Expenses.	Net Revenue.	Fixed Charges.	Net Income.
1m.,	Aug.,	'11	$9,997	$6,132	$3,864	$2,042	$1,823
1 "	"	'10	9,155	5,855	3,300	1,945	1,355
12 "	"	'11	114,876	70,807	44,069	23,900	20,169
12 "	"	'10	108,202	69,974	38,228	22,893	15,335

BROCKTON & PLYMOUTH STREET RAILWAY.

1m.,	Aug.,	'11	$14,872	$8,334	$6,577	$1,474	$5,063
1 "	"	'10	16,057	7,458	8,598	1,602	6,997
12 "	"	'11	119,060	84,939	34,121	18,494	15,627
12 "	"	'10	121,870	87,016	34,853	21,038	13,815

BROOKLYN RAPID TRANSIT SYSTEM.

1m.,	June,	'11	$2,045,385	*$1,280,425	$764,959	.....	.....

CENTRAL PARK NORTH AND EAST RIVER RAILROAD

1m.,	June,	'11	$57,747	*$62,674	†$4,927	.....	.....

CONEY ISLAND & BROOKLYN RAILROAD.

1m.,	June,	'11	$154,490	*$123,943	$30,548	.....	.....

EL PASO ELECTRIC COMPANY.

1m.,	Aug.,	'11	$50,588	$30,428	$20,160	$8,342	$11,817
1 "	"	'10	46,897	30,730	16,167	8,215	7,952
12 "	"	'11	671,628	387,092	284,536	98,516	186,020
12 "	"	'10	630,070	363,810	266,260	101,256	165,004

GALVESTON ELECTRIC COMPANY.

1m.,	Aug.,	'11	$50,896	$21,681	$29,215	$8,706	$20,509
1 "	"	'10	45,667	19,724	25,943	8,026	17,917
12 "	"	'11	419,440	223,748	195,692	100,876	94,816
12 "	"	'10	367,852	230,745	137,107	82,149	54,958

HUDSON & MANHATTAN RAILROAD.

1m.,	June,	'11	$237,921	*$108,038	$129,883	.....	.....

INTERBOROUGH RAPID TRANSIT COMPANY.

1m.,	June,	'11	$2,363,079	*$1,231,835	$1,131,245	.....	.....

METROPOLITAN STREET RAILWAY, NEW YORK.

1m.,	June,	'11	$1,169,283	*$867,574	$301,708	.....	.....

NEW YORK & QUEENS COUNTY RAILWAY.

1m.,	June,	'11	$118,956	*$91,799	$27,157	.....	.....

THIRD AVENUE RAILROAD, NEW YORK.

1m.,	June,	'11	$321,829	*$167,512	$144,317	.....	.....

UNION RAILWAY, NEW YORK.

1m.,	June,	'11	$282,126	*$176,882	$105,241	.....	.....

WHATCOM COUNTY RAILWAY & LIGHT COMPANY.

1m.,	Aug.,	'11	$34,161	$16,151	$18,010	$11,000	$7,010
1 "	"	'10	32,470	21,065	11,405	8,905	2,501
12 "	"	'11	426,620	208,518	218,102	126,804	91,298
12 "	"	'10	412,022	242,330	169,692	103,200	66,492

*Includes taxes. †Deficit.

Traffic and Transportation

How the Puget Sound Electric Railway Will Meet the Recent Fare Decision

The Puget Sound Electric Railway, operating between Seattle and Tacoma, Wash., has addressed to the public over the signature of R. T. Laffin, vice-president, the following statement regarding the policy it will pursue to meet the decision of the Supreme Court of Washington affirming the order regarding fares entered by the State Railroad Commission, and noted in the Electric Railway Journal of Sept. 30, 1911, page 549:

"The Railroad Commission and the Supreme Court of Washington have estimated that the Puget Sound Electric Railway will receive a 7 per cent annual return on the value of its property from the rates ordered by the commission to be established by the company. The company believes that the commission and the Supreme Court are mistaken in their estimates. It knows that the taxes which it had to pay upon its property exceeded by 100 per cent the amount estimated by the commission. It knows that its through business from Seattle to Tacoma has not reached the estimate of the commission and the court. Knowing these things, it fears that estimates which have proved erroneous in the past may likewise prove erroneous in the future.

"The company, by reason of the low rates which it first established, was unable to obtain a fair return upon its investment. This, and that the company was justified in raising its rates, the commission and the court found to be facts. The company raised its rate to a uniform rate of 2 cents a mile, with a commutation rate of 1.4 cents a mile. The commission and the court hold that 2 cents a mile is a reasonable rate where water competition exists, but in the suburbs of Seattle the company can be required to carry for as little as 0.76 cents a mile.

"The company fears that this decision, if adhered to, will prove disastrous to it and to the State. It is confident that neither the commission nor the court wishes to cripple it or to retard the building of interurban railways in Washington. Acting under this belief, the company will not petition for a rehearing. It will not, at the present time, sue out a writ of error from the Supreme Court of the United States, nor apply for a stay, nor at the present time will it seek in the federal court to enjoin the carrying out of the order of the commission. On the contrary, when the decree of the Supreme Court of the State shall have been rendered, it will, under protest, comply with the order of the commission. It will give the rates ordered a fair trial, and if the trial proves that the estimates of the commission and the court were wrong and the company injured thereby, it will look with confidence to the commission of its own motion to change its order, as it has the power to do, and thereby right the wrong which it has unintentionally inflicted.

"If, however, in such case the commission offers no relief, then the company will seek the protection of the courts to prevent the confiscation of its property, and believes that in so doing it will be sustained not only in the courts, but also in the opinion of all fair-minded persons."

Letter on Courtesy Addressed to Brooklyn Employees

The following letter signed by J. F. Calderwood, vice-president and general manager of the Brooklyn (N. Y.) Rapid Transit Company, has been distributed among the conductors, motormen and other employees of the transportation department, each letter being inclosed in a separate envelope and addressed to the employee in person:

"The management desires to express its appreciation of your fidelity and the increasing spirit of co-operation, always a potent factor in the successful handling of the patrons of this company. We must not, however, overlook the fact that the details of carrying passengers on our cars are necessarily complex and must be carefully observed. Obedience and the enforcement of regulations, honesty and frankness, alertness, and especially courtesy, are but some of the requirements of the individual employee to whose

care the traveling public is intrusted, and to the matter of courtesy we wish especially to refer.

"We must remember that we are all specially trained in a business with which the public is only acquainted from the viewpoint of a passenger. Many things in connection with our duties are simple to us because they are part of our daily routine, and when we are asked a question we should not assume that the public understands it as well as we do, but we should answer it courteously.

"There are always two sides to every question and to err is human, but if you are called upon to enforce a rule, do it in a quiet, dignified and courteous manner and always avoid argument; comply, whenever possible, with reasonable requests that affect the comfort and convenience of the passenger; and if you are unable to meet the condition or satisfy the passenger politely refer him to the office of the general manager, where all such matters are acknowledged and carefully investigated.

"Courtesy is something that the public and our passengers have a right to expect from employees of this company; courtesy always pays a dividend—pays you and pays the company; it pays you because it makes you friends; it pays the company because it is judged by the conduct of its employees; and it always reflects to your credit.

"The company wants its employees to be friends with the public; it wants to be friends with the public itself, and it is through courteous consideration of the patrons of the company and of the public that this can, in a large measure, be accomplished."

Car Ticket Order in St. Joseph, Mo.—The St. Joseph Railway, Light, Heat & Power Company recently issued an order to conductors to refuse all tickets detached from ticket books so as to put a stop to the practice of newsboys selling tickets with papers.

Traffic on Chicago Elevated Line Suspended Temporarily.—Traffic on the Metropolitan West Side Elevated Railway, Chicago, Ill., had to be suspended for several hours on Oct. 9, 1911, on account of an accident in the boiler room of the company's power plant in Loomis Street.

Los Angeles-Pacific Company Appeals Fare Case.—An appeal has been taken to the Superior Court by the Los Angeles-Pacific Company, Los Angeles, Cal., from the decision of Justice of the Peace Young, holding 5 cents to be the legal fare between Los Angeles and Colegrove.

Reduction in Fare Asked in Lincoln, Neb.—The Public Service League of Lincoln, Neb., has petitioned the Nebraska State Railway Commission to enter an order to require the Lincoln Traction Company to charge not more than 3 cents for a ride of 3 miles or less from the center of the business district of Lincoln.

Accident Prevention Campaign of Indiana Union Traction Company—Letters from the Indiana Union Traaction Company, Indianapolis, Ind., calling attention to the proper manner in which to alight from street and interurban cars and the danger of crossing the tracks were read on Oct. 2, 1911, in all the schools along the lines of the company.

Reduction in Fare Between Albany and Glens Falls, N. Y.—The joint one-way fare in both directions between Albany and Glens Falls on the Hudson Valley Railway has been reduced from $1.05 to $1. The reduction went into effect on Oct. 1, 1911, by special permission of the Public Service Commission of the Second District of New York.

Winter Schedule of Detroit, Monroe & Toledo Short Line.—The Detroit, Monroe & Toledo Short Line Railway, Detroit, Mich., placed a fourteen-car service in effect on Oct. 10, 1911. Seven limited cars a day make the run from Detroit to Toledo with one stop at Monroe in two hours. Seven express trains a day make the run in two hours fifteen minutes and stop at all the towns along the way.

Reduction in Fare on Bay State Street Railway—The Bay State Street Railway, Boston, Mass., has granted a 5-cent fare between East Bridgewater and Brockton, Mass., between the hours of 6 a. m. and 8 a. m. and 4:30 p. m. and 6:30 p. m. At other times the rate will be 10 cents, which has been the regular rate for all hours hitherto. Citizens of East Bridgewater who are employed in Brockton asked for the special rate.

Complaint Against Ogdensburg Street Railway Closed.—The Public Service Commission of the Second District of New York has closed upon its records the complaint of the employees of the St. Lawrence State Hospital at Ogdensburg, directed against the Ogdensburg (N. Y.) Street Railway, as to service rendered the public. Since the filing of the complaint the company has agreed with a committee of employees that the troubles complained of will be corrected without the necessity of further action by the commission.

Denver Association Considering Loans to Members.—The officers of the Tramway Mutual Aid Association, composed of employees of the Denver (Col.) City Tramway, have under consideration a plan whereby small loans will be made to members who are deserving and in need of funds on account of sickness or some other circumstances over which they have no control. In this way it is hoped to discourage the practice of the men in arranging loans from professional money lenders who charge usurious rates.

Separate Compartments for Motormen in Indiana.—The officers of the Ohio Electric Railway have agreed to provide separate compartments for motormen on the cars which it operates in Indiana, without a formal order from the Railroad Commission. This completes the preliminary work of the Indiana Commission in ordering the construction of such compartments. William J. Wood, chairman of the commission, says that all interurban cars in Indiana will have separate compartments for motormen by July 1, 1912.

Request Made for Shelter Houses.—Citizens of Throop and Mentz, Cayuga County, have asked the Public Service Commission of the Second District of New York to require the Auburn & Northern Electric Railroad to re-establish shelter houses for the accommodation of its patrons at Stops 1 and 3 on its line. The petition alleges that in December, 1910, the shelter house at Stop 3 was destroyed by fire, that in August, 1911, the shelter house at Stop 1 was destroyed by fire and that the company has neglected to consider favorably the re-establishment of the shelter houses, much to the inconvenience of the patrons of the road. The application states that the demand for shelter houses at these points is greater now than it was when the road was first established by reason of increased travel.

Decision by Ontario Railway & Municipal Board.—The Ontario Railway & Municipal Board has rendered judgment in favor of the company in the matter of new switches and switch extensions on the Metropolitan line of the Toronto & York Radial Railway. The application had been made in pursuance of the board's former order to establish a 5-minute service between North Toronto and Glen Grove. The company's plan of switches and turnouts necessary to enable the line to give the 5-minute service ordered was shown by the evidence and by the report of the board's engineers to be satisfactory, and, accordingly, it has received the approval of the board. The board, however, has made an alternative recommendation, to the effect that the parties endeavor to agree upon the double-tracking of the road.

New York Association to Safeguard Children.—The Street Railway Association of the State of New York is perfecting plans to educate children to the danger of accidents that they risk each hour. With the co-operation of teachers and parents, personal talks, pamphlets of warning and danger signs are to be presented in schoolroom, home and playground. Beginning with the mothers and fathers technical data showing the margin of safety about all kinds of cars and tracks are to be distributed. On blotters and other attractive souvenirs prepared for the youngsters there have been printed such maxims as "Don't hitch to a car," "Don't touch loose wires," "Don't play on tracks," "Don't jump off until the car stops," "Don't cross tracks till you look." Recent reports of the Public Service Commissions of the First and Second Districts show that accident damages have cost the street railways of New York State almost $5,000,000 in one year.

Effect of Increase in Fare on Hartford & Springfield Street Railway.—H. S. Newton, general manager of the Hartford & Springfield Street Railway, Warehouse Point, Conn., has addressed a long letter to the stockholders of the

company, reviewing the operation of the company for the year ended June 30, 1911, in which he refers in part as follows to the 6-cent fare zones adopted by the company two years ago: "The second year's experience with the 6-cent fare enables me to state positively that the inauguration of this fare has resulted in increased revenue to the road and a very satisfactory acceptance of conditions by the public itself. There are no longer protests by our patrons." Mr. Newton also offers the following explanation of the decrease in return from the park property of the company: "I regret to say that the returns in the park property this season show a falling off from last year. As the same report comes from other similar properties throughout New England, I am inclined to conclude that people are looking for other lines of amusement and are not simply tired of the particular attractions which your company's park has to offer. The falling off in returns is accounted for no doubt by the popularity of the moving-picture shows, examples of which may be found in Thompsonville and Rockville all the year round, and Windsor Locks, Thompsonville and Rockville during the fall, winter and spring."

Politeness and Courtesy in Seattle.—In commenting editorially on the letter received by the Seattle (Wash.) Electric Company from Lieutenant-Colonel Penrose, stationed at Ft. Lawton, in the suburbs of Seattle, informing the company "of the universal politeness and courtesy I have always received and observed in your conductors and motormen on the Ft. Lawton branch," the Seattle *Post-Intelligencer* said in part: "Politeness and courtesy are found almost universally among the street car men of Seattle—a fact which strangers are prone to comment upon. Of course, street car men have the weaknesses of other men. When treated with boorish rudeness they are apt to resent it, although riders on the street cars have noticed instances of rare self-restraint among the trainmen, even under such circumstances. There are, of course, some exceptions to the rule of courtesy, but it is the rule for all that. Few public servants, brought into such intimate daily contact with the public, behave themselves as well, on the whole, as do the Seattle street car men, and habitual users of the lines, which means the majority of the people of the city, witness daily instances of thoughtful kindness on their part, especially to women, to the aged and infirm. It may be considered a small thing, but it is one of the things which are of value to the city in more ways than one. The courtesy of our street car men is one thing which gives visitors here a kindly recollection of the city and inclines them to speak good words for it when they leave."

Club Rooms for Employees in Los Angeles.—Plans have been completed by the Pacific Electric Railway, Los Angeles, Cal., for converting the brick building at Seventh Street and Central Avenue, Los Angeles, having outside dimensions of approximately 100 ft. x 30 ft., into quarters for the employees to be equipped and maintained at the expense of the company. On the second floor of the building will be a reading room provided with magazines, books and current papers. There will also be a large room equipped with billiard tables and other devices for entertainment and diversion. Individual lockers will be provided for the use of the members. One of the features will be a "demonstration" room, where a model signal system, air-brake and various electrical devices will be installed to enable the men to perfect themselves in the use of this equipment. The company also expects to serve sandwiches, coffee and other refreshments, and there is to be a gymnasium and a system of shower baths. Paul Shoup, vice-president of the company, is quoted as follows: "We have had this plan under consideration for some time, but have only recently determined on the details. We propose to provide a comfortable, homelike place along club lines, with gymnasium, reading room, instruction room, places for games, bath, buffet, etc., in order that our employees may have a place they can call their own for recreation and study. Most of our employees in the course of their business congregate at the location which has been chosen, and we are fortunate in having at that point a brick building particularly adapted to club room purposes. We expect to have demonstration lectures and entertainments; in short, to make the building an all-around meeting place for our men."

Personal Mention

Mr. J. L. Sullivan has been appointed general freight and passenger agent of the Ft. Dodge, Des Moines & Southern Railroad, Boone, Ia.

Mr. Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, New York, N. Y., has been nominated for president of the New York Railroad Club.

Mr. John F. Lambert has been appointed superintendent of the Ware & Brookfield Street Railway, Ware, Mass., to succeed Mr. D. E. Pepin, whose resignation was announced in the Electric Railway Journal of Oct. 7, 1911.

Mr. W. G. Parker has resigned as electrical engineer and superintendent of track of the Lewiston, Augusta & Waterville Street Railway, Lewiston, Maine, to become connected with the Dover & Foxcroft Light & Heat Company, Dover, Maine.

Mr. George W. Dunlap, engineer of power stations of the Worcester (Mass.) Consolidated Street Railway, has been appointed electrical engineer of the Public Service Commission of the First District of New York, in charge of the bureau of transit inspection under Mr. E. G. Connette, chief of the transportation department of the commission.

Mr. George W. Adamson has been appointed master mechanic of the Albany Southern Railroad, Albany, N. Y. Before becoming connected with the Albany Southern Railroad Mr. Adamson was with the Interborough Rapid Transit Company, New York, N. Y., for eighteen months. Previously Mr. Adamson was superintendent of rolling stock and shops of the Bombay (India) Tramways for three years and was with the London (England) County Council Tramways for two years. He was also connected with British electrical manufacturing concerns for several years.

Mr. Thomas Pumfrey has resigned as engineer of maintenance of way of the Portland Railway, Light & Power Company, Portland, Ore., to accept an interest in a railway contracting firm which is now engaged in constructing a section of the railway being built by the Harriman interests. Before severing his connection with the Portland Railway, Light & Power Company, Mr. Pumfrey was presented with a gold watch by his associates. Mr. Pumfrey was formerly engineer of way of the International Traction Company, Buffalo, N. Y., with which company he was connected for fourteen years.

Mr. John Sutherland has been appointed master mechanic of the Tri-City Railway & Light Company, Davenport, Ia., of which J. G. White & Company, Inc., New York, N. Y., are operating managers, to succeed Mr. Jacob W. Gerke, whose appointment as master mechanic of the Wilmington & Philadelphia Traction Company and the Southern Pennsylvania Traction Company was noted in the Electric Railway Journal of July 1, 1911. Mr. Sutherland has recently been connected with the Interborough Rapid Transit Company, New York, N. Y., under Mr. J. S. Doyle, superintendent of car equipment of that company. Mr. Sutherland is Scotch by birth, and about twelve years ago was connected with J. G. White & Company, London, Eng., in work which they did in Great Britain. Later he was connected with the Westinghouse Electric & Manufacturing Company in the United States.

Mr. Sidney O. Swenson, recently assistant electrical engineer of the Detroit River Terminal electrification, was appointed electrical engineer of the Kansas City Railway Terminal Company on Oct. 1, 1911. He was graduated from the University of Illinois in 1899. After a short business connection with the electrical department of the Illinois Steel Company, he became associated with the Commonwealth Edison Company, Chicago, Ill., where he remained from February, 1900, to May, 1905. He then joined the engineering department of the New York Central & Hudson River Railroad with which his work consisted principally in installing and testing the electrical equipment at the Yonkers power station and the High Bridge terminal. In September, 1907, Mr. Swenson became assistant electrical engineer of the Detroit River Tunnel electrification and remained on that work until July, 1911, when the instal-

lation was completed. Mr. Swenson is a brother of Mr. Bernard V. Swenson, formerly secretary of the American Electric Railway Association.

Mr. Charles S. Johann, chief engineer of the Lewisburg, Milton & Watsontown Passenger Railway, Milton, Pa., and sales engineer of the Allis-Chalmers Company, has resigned from the latter company to become secretary and general manager of the Morris & Somerset Electric Company, with headquarters at Morristown, N. J. Mr. Johann pursued the apprentice course at the shops of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, and served in both the engineering and sales departments of that company. He was also connected with the American Railways as general superintendent at Springfield, Ohio, and designed and supervised the construction of a power house for the Springfield Light, Heat & Power Company. Later he was manager of the Baltimore office of the Westinghouse Machine Company. Mr. Johann was also connected with Dodge & Day, Philadelphia, and with E. W. Clark & Company, Philadelphia, bankers, and enlarged and rebuilt the plant of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.

Mr. C. D. Crooks, traffic manager of the Ft. Dodge, Des Moines & Southern Railroad, Boone, Ia., since March 1911, was appointed general manager of the company on Oct. 15, 1911. Mr. Crooks was born in Iowa in July, 1874. He entered railway work in 1893 as a ticket agent for the Des Moines Union Railway, Des Moines, Ia. From 1895 to 1898 he was agent of the Des Moines, Northern & Western Railway at Fonda, Ia., and from 1898 to 1901 was agent of the Chicago, Milwaukee & St. Paul Railway at Boone, Ia. Mr. Crooks was next appointed chief clerk to the division freight agent of the Chicago, Milwaukee & St. Paul Railway at Des Moines, Ia., and served in this capacity from 1901 to 1904. He resigned from the Chicago, Milwaukee & St. Paul Railway to become chief clerk to the division freight agent of the Chicago, Rock Island & Pacific Railway at Des Moines, a position he held during 1905 and 1906. In 1907, Mr. Crooks became commercial agent of the Chicago, Rock Island & Pacific Railway at Des Moines, but resigned from this company after a short term of service to become general freight and passenger agent of the Ft. Dodge, Des Moines & Southern Railroad at Boone, Ia. He continued as general freight and passenger agent of the Ft. Dodge, Des Moines & Southern Railroad until March 1, 1911, when he was appointed traffic manager.

OBITUARY

Daniel B. Hasbrouck, who has been president of the Metropolitan Street Railway, New York, since 1903, died at his home in Brooklyn on Oct. 11. Mr. Hasbrouck at the time of his death was probably the oldest street railway official in the country. He was born Jan. 30, 1819, in Onondaga County, N. Y., but moved to New York City at an early age. He had a mercantile training, but in 1857, at the time of the establishment of the Metropolitan Police District in New York, he was appointed to a responsible position in that organization. He remained with it until 1878. In 1862 he was largely instrumental in the organization of six regiments of militia among the police force of New York City. He resigned from the Metropolitan Police organization in 1878 to become secretary and treasurer of the Houston Street, West Street & Pavonia Ferry Railway. He remained with this company until it became one of the original constituent companies of the Metropolitan Street Railway, in 1893, and soon after that amalgamation Mr. Hasbrouck was elected vice-president of the Metropolitan Street Railway. This position he retained until his elevation to the office of president of the Metropolitan Street Railway Company, which occurred soon after the lease of that company to the Interurban Street Railway Company in 1903. He also held other offices in the Metropolitan organization. Up to within a few months, and for some time after passing his ninety-first birthday, Mr. Hasbrouck was in daily attendance at the office of the company at 621 Broadway, and actively engaged in the work of the company. Mr. Hasbrouck was president of the Street Railway Association of the State of New York in 1893-94, and twice served as first vice-president of that association.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

Mobile (Ala.) Interurban Railway.—Incorporated in Alabama to build a 2-mile railway from the terminus of the Spring Hill line of the Mobile Light & Railway Company, Mobile, to Pinehurst. The company will operate gasoline motor cars. Capital stock, authorized, $25,000. Officers: P. C. Meechem, president, and C. V. Shoub, vice-president. [E. R. J., Oct. 7, '11.]

Redlands University Railway, Redlands, Cal.—Application for a charter has been made in California by this company to build a 2-mile electric railway from Redlands to the Redlands University. Capital stock, authorized, $15,000. Directors: G. S. Turrell and F. A. Moore, Redlands, and J. W. Curtis, San Bernardino. [E. R. J., Oct. 7, '11.]

Creston-Winterset Interurban Railway, Creston, Ia.—Chartered in Iowa to build a 60-mile electric railway between Creston, Des Moines, Spaulding and Macksburg. Capital stock, $500,000. R. Brown, Creston, president; C. E. Wilson, vice-president; A. S. Lynn, Orient, secretary, and W. W. Walker, Macksburg, treasurer. [E. R. J., June 3, '11.]

Red Oak & Northwestern Railway, Red Oak, Ia.—Incorporated in Arizona to build an electric railway between Red Oak and Des Moines. Capital stock, issued, $150,000. Officers: George C. Boleau, Red Oak, president, and H. W. Clovis, Red Oak, secretary. Headquarters, Red Oak. [E. R. J., May 21, '11.]

***Michigan-Indiana Traction Company, Lansing, Mich.**—Incorporated in Michigan to build an electric railway to connect Coldwater and Battle Creek, via Athens and Union City. Capital stock, authorized, $750,000. Incorporators: P. M. Dunn, Chicago, Ill., and Walter Powers, Battle Creek.

***Columbia & Northern Electric Railway, Columbia, Mo.**—Application for a charter has been made in Missouri by this company to succeed the North Missouri Central Railway, Mexico, and to build an electric railway to connect Columbia, Jefferson City and Mexico. Another line will be built from Columbia to Moberly. From Hersford a branch will be built to Fulton. Incorporators: A. J. Estes and M. G. Quinn, Columbia; E. M. Stevens, East St. Louis, Ill.; W. A. Van Diver, C. Porter Johnson and Julius Koch, St. Louis.

FRANCHISES

Los Angeles, Cal.—The Pacific Electric Railway has asked the Board of Public Utilities for permission to electrify the old Santa Monica steam road and use it for passenger and freight service.

***Pasadena, Cal.**—J. W. Goodwin, president of the Nazarene University Park Company, and others have asked the City Council for a franchise to build an electric railway in Pasadena, from Lake Avenue to the city limits, on Washington Street.

San José, Cal.—C. P. Anderson, San José, has asked the Board of Supervisors of the county of Santa Clara for a franchise to construct a single or double-track railway in the county, to be operated by electricity or gasoline. [E. R. J., Oct. 7, '11.]

Hartford, Conn.—The Connecticut Company has asked the Council for a franchise to double-track its lines in Hartford on Prospect Avenue, from Farmington Avenue to Asylum Avenue.

Gary, Ind.—The Indianapolis, Chicago & Meriden Railway, Indianapolis, has received a 50-year franchise from the Board of Public Works on Seventeenth Avenue, in Gary. The line will connect Indianapolis, Sheridan, Gary, Hammond, Monticello and Warsaw. M. J. Mooreland, secretary. [E. R. J., Oct. 7, '11.]

Topeka, Kan.—The Union Traction Company, Coffeyville, has received permission from the Public Utilities Commission to build an extension from Cherryville to Parsons.

New Iberia, La.—The Southwestern Traction & Power Company, New Orleans, has received a franchise from the City Council in New Iberia.

*West Baltimore, Md.—J. S. J. Healy, West Baltimore, and associates have asked the City Council for a franchise to build an electric railway in West Baltimore.

Boston, Mass.—The Boston & Eastern Electric Railroad has received a franchise from the City Council for the location of its tracks in Boston.

Springfield, Mass.—The Berkshire Street Railway, Pittsfield, has received a franchise from the Aldermen in Springfield.

Manchester, N. H.—The Manchester Street Railway has received a franchise from the Mayor and Aldermen to relocate and double-track some of its lines in Manchester.

*Canton, Ohio.—J. W. Whitacre and others are planning an interurban line between Canton and Carrollton, via Waynesburg and other smaller towns.

Cincinnati, Ohio.—An ordinance has been introduced in the City Council, giving the Cincinnati Traction Company authority to extend its Avondale line to the railroad crossing at Bond Hill.

Tiffin, Ohio.—C. C. Anderson and associates have obtained a right-of-way from Tiffin to Fremont for an electric railway. They have asked the Councils for franchises in Fremont and in Tiffin. [E. R. J., Sept. 23, '11.]

*Parkrose, Ore.—The Parkrose Association has received a franchise from the County Commissioners to build a 1-mile line from the city limits of Portland along Sandy Road. The County Commissioners have been asked for a franchise to extend this proposed line to Troutdale, a distance of about 9 miles. About 3 miles of right-of-way have been obtained. The investment company proposes to operate only outside of the city limits of Portland, connecting at the boundary with the Rose City Park line of the Portland Railway, Light & Power Company, which will soon be extended to the city limits. The contract to build the line along Sandy Road has been awarded. Bryon Reynolds and C. Powell are interested.

Spartanburg, S. C.—The Greenville, Spartanburg & Anderson Railway, Anderson, has received a railway franchise from the City Council in Spartanburg.

Knoxville, Tenn.—The Knoxville Railway & Light Company has received a franchise from the City Council for the extension of its Sevierville Pike line to the New Island Home Park suburb. The franchise also grants the right-of-way to double-track the present Sevierville line.

Ft. Worth, Tex.—The Northern Texas Traction Company has received a franchise from the City Council to extend its line through the southeastern section of Polytechnic Heights.

TRACK AND ROADWAY

Mobile (Ala.) West Shore Traction Company.—This company will increase its capital stock from $10,000 to $100,000. Surveys will be begun at once on its line between Mobile and Scranton. [E. R. J., Sept. 16, '11.]

Arkansas Valley Interurban Railway, Little Rock, Ark.—Surveys are being made by this company between Winfield and Wichita. It is reported that a line will be built from Wichita to Oklahoma City. A. O. Boyle, Wichita, general manager. [E. R. J., Aug. 5, '11.]

San Joaquin Light & Power Company, Bakersfield, Cal.—Work has been begun on the reconstruction of this company's lines in Bakersfield.

Monterey & Del Monte Heights Electric Railway, Monterey, Cal.—The necessary capital has been secured by this company and the line will be completed at once. It extends from the end of Broadway in Del Monte Heights to the city limits, a distance of 3 miles. Orders have been placed for the necessary material and a reorganization of the company has been effected. George W. Phelps, secretary.

Oakland (Cal.) Traction Company.—The construction of an extension of the Oakland Avenue line is being considered by this company.

San Francisco, Oakland & San José Railway, Oakland, Cal.—With the purchase of property in Oakland this company has secured the last link in its right-of-way between Oakland and San José. The surveys have been completed and material ordered, and construction will be begun at once in Oakland.

East Shore & Suburban Railway, Richmond, Cal.—This company expects to double-track 7 miles of its main line in Richmond.

Sacramento & Woodland Railway, Sacramento, Cal.—Contracts have been awarded by this company for two sections of its electric railway. The Dozier Construction Company will construct the section between Woodland and Elkhorn, while the Cooper & Hawley Company will build another section. Bids will be called for on the bridge trestle 10,000 ft. long across Yolo basin, T. T. C. Gregory, president. [E. R. J., Sept. 14, '11.]

San Diego (Cal.) Electric Railway.—During the next few weeks this company will build about 12 miles of second track in the suburbs of San Diego.

San Diego (Cal.) Southern Railway.—Work will be begun at once by this company replacing the old 40-lb. rails with 60-lb. steel rails on the electric division of its line in San Diego.

California Midland Railroad, San Francisco, Cal.—An option has been obtained by this company on the Nevada County Narrow Gauge Railroad, which extends from Colfax to Grass Valley and Nevada City. The company will change the gage of the railroad and electrify it. This is part of a plan to build an electric railway which will connect Marysville, Colfax, Grass Valley, Nevada City, and Auburn.

Vallejo & Northern Railway, Vallejo, Cal.—Right-of-way has been secured by this company for its line between Sacramento and Woodland. Contracts for the construction of the 35-mile section to connect Vallejo and Sacramento will be awarded soon. Connection will be made with San Francisco by boats.

Connecticut Company, New Haven, Conn.—Work has been begun by this company on a new bridge across the Hockanum River on its line between Manchester and Hartford.

Waycross Street & Suburban Railway, Waycross, Ga.—Plans have been completed for the organization of this company and preparations to begin operations are being made. It is expected to increase the capital stock of the company from $300,000 to $500,000. Officers: W. Deen, president; T. H. Calhoun, vice-president; H. H. Burnet, secretary, and L. J. Cooper, treasurer. [E. R. J., Sept. 9, '11.]

Freeport-Madison Electric Railway, Freeport, Ill.—W. T. Rawleigh, Freeport, advises that he is no longer interested in this railway, as reported in the ELECTRIC RAILWAY JOURNAL for Sept. 30, 1911.

Freeport Railway & Light Company, Freeport, Ill.—Plans are being made by this company for the construction of an extension in Freeport.

Hillsboro Electric Light & Power Company, Hillsboro, Ill.—This company advises that at present matters are only in a preliminary stage for this proposed electric railway between Greenville, Hillsboro and Collinsville. [E. R. J., Sept. 30, '11.]

Pekin (Ill.) City Railway.—The contract has been let and the rails ordered by this company for the construction of its extension from Pekin City to East Bluff. J. E. Melick, Springfield, president. [E. R. J., Sept. 9, '11.]

Northern Illinois Industrial Company, Waukegan, Ill.—This company, which expects to build an electric railway between North Chicago and Waukegan, has elected the following officers: Carl E. Sayler, North Chicago, president; J. P. Arthur, Waukegan, vice-president; W. B. Smith, Waukegan, secretary, and Theo. H. Durst, Waukegan, treasurer. [E. R. J., June 10, '11.]

Evansville (Ind.) Railways.—Within the next two months this company will begin work on the electrification of the Illinois Central Railroad tracks from Evansville to Henderson, crossing the Ohio River, which tracks have been leased by this company. It has organized a new company known as the Evansville, Henderson & Owensboro Railway and this line will be operated by the Evansville Railways. The length of the line is 10 miles and it is expected to have it in operation by April 1, 1912. A steel hull car ferry boat will be used to ferry the interurban cars across the Ohio River at a point half way between Evansville and Henderson.

Vincennes, Washington & Eastern Traction Company, Vincennes, Ind.—This company has awarded a contract to the Brindley Construction Company, Vincennes, for the construction of its 33-mile electric railway between Vincennes and Loogootee. The Brindley Construction Company proposes to sublet part of this contract. Bids will be opened and contracts awarded Nov. 8. Bids are also asked for overhead material. [E. R. J., Aug. 19, '11.]

Indiana & Northwestern Traction Company, Monticello, Ind.—Work on this company's line through Newton County has been completed between the Kankakee River and Mt. Ayr, a distance of 18 miles. The plan is to extend this line north to Chicago and south to Lafayette. Eugene Purtelle is in charge of the work. [E. R. J., Sept. 9, '11.]

Des Moines (Ia.) City Railway.—The Scott Street line in Des Moines will be rebuilt by this company.

Topeka (Kan.) Railway.—Construction will be begun at once by this company on an extension of its tracks in Topeka, from Buchanan Street and Seventeenth Street to the Country Club.

Berkshire Street Railway, Pittsfield, Mass.—Plans have been filed with the Massachusetts Railroad Commission for an extension of this line in Great Barrington and for a line over private land in Otis, near Becket. The company has received local franchises.

Benton Harbor-St. Joe Railway & Light Company, Benton Harbor, Mich.—On Oct. 5 this company placed in operation its extension from Benton Harbor to Dowagiac.

Electric Short Line Railroad, Minneapolis, Minn.—This company has awarded a contract to George Turnham & Company for grading 3 miles of its line beyond Medicine Lake. It will connect Minneapolis, Medicine Lake and Wayzata.

Winona Railway & Light Company, Winona, Minn.—This company will expend about $20,000 in improvements on its lines in Winona.

Interstate Railway, Kansas City, Mo.—During the next two months this company will award contracts to build an extension from Kansas City to St. Joseph.

Schenectady (N. Y.) Railway.—This company has asked the Public Service Commission for its approval of the franchise to build extensions of its tracks in Schenectady.

Piedmont Railway & Electric Company, Burlington, N. C.—This company has placed in operation its 8½-mile electric railway between Burlington, Graham and Haw River. George W. Hatch, Burlington, general superintendent. [E. R. J., July 15, '11.]

Bartlesville (Okla.) Interurban Railway.—About $50,000 is being spent by this company on improvements. It has just paved 1 mile of track with cement base and brick outside.

Johnson (Pa.) Traction Company.—This company has placed in operation its 1½-mile extension to the East Tennessee State Normal School in Johnson.

Middletown & Elizabethtown Street Railway, Middletown, Pa.—This company advises that it will begin construction within the next twenty days on its 10-mile electric railway between Elizebethtown and Middletown. The company will operate four cars. Capital stock, authorized, $350,000; bonds, issued, $350,000. Officers: M. K. Blaugh, Elizabethtown, president, and F. H. Alleman, 218 Essex Building, Newark, N. J., vice-president. [E. R. J., Aug. 12, '11.]

Philadelphia (Pa.) Rapid Transit Company.—Construction on this company's extension in Philadelphia of its South Nineteenth Street line to Nineteenth Street and Porter Street, via the Girard estate, has been begun.

Philadelphia & Western Railway, Philadelphia, Pa.—This company has begun the construction of a line from Strafford to Norristown to connect with the Montgomery Railway. Another spur will be built to North Wales to connect with the Lehigh Valley Transit Company's tracks.

Stroudsburg & Water Gap Street Railway, Stroudsburg, Pa.—A 5-mile stretch of track between Portland and Water Gap was completed recently by this company.

Sioux Falls & Southern Minnesota Traction Company, Pierre, S. D.—This company has contracted for the right-of-way to Blue Earth, Minn., a distance of 110 miles, for its projected electric railway between Albert Lea, Minn., and Sioux Falls, S. D. H. W. Knight, Chicago, is interested. [E. R. J., May 6, '11.]

***Greenville, Tex.**—J. F. Nichols and associates are considering plans to build an electric railway from Greenville to Clarksville, via Enloe, Cooper and Deport.

San Antonio (Tex.) Traction Company.—An extension of the lines of this company is now under way to Los Angeles Heights, in northwest San Antonio. Hagelstein & Dickinson Company have received the contract for the work.

Sherman, Tex.—Plans have been decided upon whereby the necessary money will be raised to secure the surveys for the construction of an interurban railway between Sherman, Paris and Clarksville. J. F. McReynolds, Paris, is interested. [E. R. J., Aug. 26, '11.]

Salt Lake & Ogden Electric Railway, Salt Lake City, Utah.—During the next few weeks this company will award contracts to build 4 miles of double track in Salt Lake City and will wire all industrial sidings for electric operation. The company will also award contracts in the near future for the construction of several concrete bridges to replace old wood bridges. It will erect one large heavy-timber bridge.

***Great Falls, Va.**—Surveys are under way for the construction of an electric railway between Great Falls, Bethesda and Chevy Chase. This line, it is said, will connect with the Capital Traction Company's line at Chevy Chase.

South Morgantown Traction Company, Morgantown, W. Va.—Plans are being considered by this company for an extension along the east side of the Monongahela River to connect with an extension of the Fairmont & Clarksburg Railway at the county line. Most of the right-of-way has been secured and financial backing has been assured.

Chicago & Wisconsin Valley Railroad, Madison, Wis.—It is reported that this company will build a line around Lake Monona. A. T. Russell, Chicago, general manager. [E. R. J., Sept. 30, '11.]

SHOPS AND BUILDINGS

Kokomo, Frankfort & Western Traction Company, Kokomo, Ind.—Plans are being made by this company to build a new interurban station at Russiaville. The structure will be one-story, with basement, and of brick construction. The cost is estimated to be about $3,000. The company will also build a depot at Frankfort. The building will be two stories and basement and of brick construction. The cost will be $10,000. George J. Marott, Kokomo, president. [E. R. J., Aug. 19, '11.]

New Orleans Railway & Light Company, New Orleans, La.—Plans are being made by this company to build new central carhouses in New Orleans.

Boston & Eastern Electric Railroad, Boston, Mass.—This company will build stations in Boston as follows: At Post Office Square near Porter Street; near Prescott Street, between Bennington Street and Saratoga Street, and at the northwesterly end of Breeds Island. The order will go before the joint Board of Railroad and Boston Transit Commissioners for approval.

Detroit United Railways, Detroit, Mich.—This company is reported to have taken options on land in Greenfield, including a 13-acre tract located about two blocks beyond the city limits, on Grand River Avenue. Should the company exercise its option on any of these tracts of land it is supposed that it will build turning loops and carhouses for the Grand River-Jefferson line, as these cars have all been housed at the east end of the line in the past.

Gulfport & Mississippi Coast Traction Company, Gulfport, Miss.—This company has purchased equipment for its new machine shop to be erected in Gulfport. The structure is 40 ft. x 44 ft.

Northern Ohio Traction & Light Company, Akron, Ohio.—Grading has been begun by this company previous to the construction of the company's new carhouse at North Main Street in Akron. [E. R. J., Aug. 19, 11.]

Bartlesville (Okla.) Interurban Railway.—A new carhouse will be built by this company at Bartlesville.

Fairmont & Clarksburg Traction Company, Fairmont, W. Va.—This company has awarded to T. L. Burchinal the contract for the construction of its new freight station and storehouse on First Street, South Side, in Fairmont. The structure will be three stories high and a basement, and of brick construction. The first story will be utilized for the freight depot; the basement will be the storehouse, while the two upper floors will be made into flats. The depot will have a floor space of 35 ft. x 65 ft. Work has been begun. [E. R. J., Sept. 2, '11.]

POWER HOUSES AND SUBSTATIONS

Metropolitan West Side Elevated Railway, Chicago, Ill.—Bids are being asked by this company for the construction of a new substation at 259 South Franklin Street, in Chicago. The structure will be one-story and basement and of brick, steel and concrete construction.

Freeport Railway & Light Company, Freeport, Ill.—Plans are being made by this company for several improvements at its power plant in Freeport.

Louisville (Ky.) Railway.—This company is constructing some new concrete coal bins at its power house. The company has let a contract for the installation of coal-conveying machinery to the Mead-Morrison Manufacturing Company, of New York. The plant will have a capacity of 40 tons an hour. The Babcock & Wilcox Company is completing the installation of two boilers with 600-hp capacity in the plant.

New Orleans Railway & Light Company, New Orleans, La.—Bids are being received by this company for new generator sets for its new substations.

Menominee & Marinette Light & Traction Company, Menominee, Mich.—This company will soon purchase one 1900-hp water turbine, one 1100-kw, 2200-volt, 3-phase, 60-cycle generator, switchboard instrument and three 675-kw, 2200-33,000-volt transformers, for its power plant in Menominee.

United Traction Company, Albany, N. Y.—This company has ordered one HC-8-600-kw, 600-600-volt CW rotary converter from the General Electric Company.

New York, Westchester & Boston Railway, New York, N. Y.—This company has ordered from the General Electric Company two 3-unit, 67-kva motor-generator sets, six H 25-30 transformers and switchboard.

Cape Breton Electric Company, Sydney, N. S.—This company is now installing a 500-kw Allis-Chalmers turbo-generator and auxiliaries at its power plant in Sydney.

Ohio Electric Railway, Cincinnati, Ohio.—Work has been begun by this company on its new substation at Herr's crossing in Urbana.

Tri-State Traction Company, Steubenville, Ohio.—It is reported that this company's power plant at Steubenville was partly destroyed by fire on Oct. 6.

Bartlesville (Okla.) Interurban Railway.—A new power house is now being built by this company at Bartlesville, and the company is installing one 500-kw Allis-Chalmers turbine set with type C condenser.

Northampton Traction Company, Easton, Pa.—This company has recently purchased from the General Electric Company three 200-kw, 30-unit motor-generator sets and switchboard for its power plant in Easton.

Sherbrooke Railway & Power Company, Sherbrooke, Que.—This company is now building a new substation at Derby Line, Vt. It has purchased equipment for same.

Salt Lake & Ogden Electric Railway, Salt Lake City, Utah.—During the next few weeks this company will purchase a 500-kw, high-pressure steam turbine for its power plant in Salt Lake City.

Virginia Railway & Power Company, Richmond, Va.—This company will spend nearly $250,000 to build a new power plant in Richmond. The structure will be located on Twelfth Street, near the present power station. As soon as the building is completed a unit of 12,000 hp will be installed. There will be plenty of room to install additional machinery, and the plant will finally have a capacity of 30,000 hp. The company is now further developing its water-power plant at Petersburg.

Union Utilities, Morgantown, W. Va.—During the next few weeks this company will install motor-driven pumps at its water-works pump station in Morgantown.

Manufactures & Supplies

ROLLING STOCK

Bartlesville Interurban Railway, Bartlesville, Okla., is in the market for one double-truck, double-end car.

New Orleans Railway & Light Company, New Orleans, La., is in the market for thirty single-truck trailer cars.

Bangor & Aroostook Railway, Bangor, Me., has ordered one gas-electric motor car from the General Electric Company.

Cleveland (Ohio) Railway has ordered two snow sweepers and eighteen Brill 27-FE-1 trucks from the G. C. Kuhlman Car Company.

International Railway, Buffalo, N. Y., has ordered four Brill 39-E trucks, without wheels, from The J. G. Brill Company.

United Traction Company, Coffeyville, Kan., has ordered one 20-ft. 8-in. pay-within closed car from the American Car Company.

Western New York & Pennsylvania Traction Company, Olean, N. Y., has ordered four Brill 27-G-1 trucks from The J. G. Brill Company.

Twin City Railway, South Bend, Wash., has ordered three Brill 21-E trucks through Sanderson & Porter from the G. C. Kuhlman Car Company.

Gary & Interurban Railway, Gary, Ind., has ordered one steel underframe, single-truck snow sweeper from the McGuire-Cummings Manufacturing Company.

San José Railway, San José, Cal., has ordered twelve GE-216 two-motor car equipments with type K-36 controllers, from the General Electric Company.

Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa, has ordered two GE-73 quadruple equipments with type M control, from the General Electric Company.

Saginaw-Bay City Railway, Saginaw, Mich., has ordered one 28-ft. pay-as-you-enter car body mounted on Brill 62-E-1 trucks, from the G. C. Kuhlman Car Company.

Philadelphia & Garretford Street Railway, Philadelphia, Pa., has ordered one GE-74, quadruple motor car equipment with K-34 control, from the General Electric Company.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has ordered four double-truck, long-broom snow sweepers from McGuire-Cummings Manufacturing Company.

Third Avenue Railroad, New York, N. Y., has ordered fifteen 18-ft. closed storage-battery car bodies, mounted on a special design of single trucks, from The J. G. Brill Company.

East St. Louis, Columbia & Waterloo Railway, St. Louis, Mo., has ordered five 33-ft. 4-in. closed motor car bodies, mounted on Brill 27-M.C.B.-1 trucks, from the American Car Company.

Fitchburg & Leominster Street Railway, Fitchburg, Mass., has purchased one 30-ft. 8-in. semi-convertible pay-as-you-enter motor car body, mounted on Brill 39-E trucks, from The J. G. Brill Company.

New York, New Haven & Hartford Railroad, New Haven, Conn., has ordered four alternating-current, single-phase railway motors from the Westinghouse Electric & Manufacturing Company.

Sheridan Railway & Light Company, Sheridan, Wyo., has ordered two GE-216, two-motor car equipments, with K-36 control, and two CP-27 straight air-brake equipments, from the General Electric Company.

Susquehanna Railway, Light & Power Company, New York, N. Y., has ordered three quadruple equipments of direct-current motors, with K-28-B control, from the Westinghouse Electric & Manufacturing Company.

Connecticut Company, New Haven, Conn., has ordered six CP-27-A straight air-brake equipments, four GE-80-A, 40-hp motors and four CP-27-A compressors, from the General Electric Company. The company has also ordered one flat car body and one snow plow from the Wason Manufacturing Company.

Cincinnati (Ohio) Traction Company, has ordered forty-five double equipments of No. 318 motors, with K-40-A control, from the Westinghouse Electric & Manufacturing Company.

TRADE NOTES

Woodmansee, Davidson & Sessions, Chicago, Ill., have opened a branch office at 629-630 Wells Building, Milwaukee, Wis.

Wason Manufacturing Company, Springfield, Mass., has received an order from the General Electric Company for six steel car bodies.

Sangamo Electric Company, Springfield, Ill., has received an order for a sufficient number of trip-reading car meters to equip the cars of the El Paso Street Railway.

Corrugated Bar Company, Buffalo, N. Y., formerly located in St. Louis, Mo., announces its removal, Oct. 14, to the Mutual Life Building, Buffalo. The change has been made in order to place the company in closer touch with its source of supply.

Railway Steel Spring Company, New York, N. Y., has issued $3,500,000 of first mortgage 5 per cent gold bonds of $1,000 denomination. These bonds are redeemable Oct. 1, 1931, interest payable semi-annually. They are offered for sale at 97 and accrued interest.

Calumet Car Company, East Chicago, Ill., has filed articles of incorporation. It will manufacture, rebuild and repair cars and industrial equipment of all kinds. Capital stock, $75,000. Directors: Thomas C. McCalla, Arthur N. Eroe, Walter L. Lytton and Daniel W. Rodgers.

General Electric Company, Schenectady, N. Y., has received an order from the McGuire-Cummings Manufacturing Company, Chicago, Ill., for four GE-80 four-motor car equipments, one GE-80 two-motor car equipment, one GE-80 railway motor, three GE-205 four-motor car equipments, four CP-27 straight air equipments and three CP-28 emergency air equipments.

Titanium Alloy Manufacturing Company, Pittsburgh, Pa., announces that the American Iron & Steel Association has published statistics of the tonnage of steel treated with various alloys during 1910, which show that the output of titanium steel for 1910 was 300 per cent greater than the next largest alloy steel—nickel—and was greater by 84,813 gross tons than the output of all the other alloy steels combined.

Gano Dunn, whose resignation as first vice-president and chief engineer of the Crocker-Wheeler Company was noted in the Electric Railway Journal of Aug. 26, 1911, has been elected a director and a vice-president of J. G. White & Company, Inc., New York. Mr Dunn has just returned from abroad, where, as a representative of the United States government and as president of the American Institute of Electrical Engineers, he has been attending the International Electrical Congress at Turin.

The J. G. Brill Company, Philadelphia, Pa., has received the following orders for export: Bagnall & Hilles, Yokohama, Japan, for Owari Electric Railway, six Brill 21-E trucks; E. G. Long Company, New York, for Tatsano Electric Railway, Japan, one Brill 21-E truck; Camacho, Roldan & Van Sickel, New York, two first-class coaches mounted on trucks; Noyes Brothers, for Brisbane Tramways, Australia, four Brill 21-E trucks; Siemans & Halske, New York, for Japan, thirty Brill 21-E trucks, complete with wheels and axles; Thomas Barlow & Sons, for Durban Corporation Tramways, Durban, Natal, five Brill 21-E trucks without wheels or axles.

Western Electric Company, Chicago, Ill., has experienced a most satisfactory revival in orders billed out of its factories in September. After four months of comparative declines, shipments last month showed the largest increase of this fiscal year. The gain was 12 per cent, and September sales were the largest for that month in the company's history. For the nine months to September 30 Western Electric Company's gross earnings were 4 per cent in excess of the same period last year, and total sales for the full twelve months of $66,000,000 are promised. The company by Jan. 1 will occupy about 200,000 sq. ft. of new floor space at its Hawthorne (Chicago) plant. Among other additions this space includes a new general merchandise building.

ADVERTISING LITERATURE

American Ship Windlass Company, Providence, R. I., has issued a new 40-page illustrated catalog which is devoted to the Taylor stoker.

Robert W. Hunt Company, Chicago, Ill., have issued a card describing the methods and codes used by the different rail-manufacturing companies for stamping the heat number on the rails.

New York Air Brake Company, Watertown, N. Y., has issued an illustrated booklet describing its plants on Beebee's Island and on Pearl Street. This book also contains a historical sketch of the expansion of the company since 1890.

Ingersoll-Rand Company, New York, N. Y., has issued, as Form No. 3109, a bulletin describing Class NF-1 steam-driven, single-stage, straight-line air compressors; twin flywheel, center crank, inclosed type, with steam and air cylinders arranged in tandem. The bulletin shows several views of these machines in section, and gives tables of cylinder diameters, dimensions and capacities.

Union Switch & Signal Company, Swissvale, Pa., has published Bulletin No. 57, which contains a general explanation of the principles of automatic signaling for electric railways, together with descriptions of the application of these principles to typical signal installations. The bulletin deals particularly with installations of signals for single-track roads. The several systems presented are designed not only to afford complete protection but also to provide means for making proper meets with minimum delay at passing sidings. The text is illustrated with numerous diagrams of circuits and signal locations and views of the different pieces of apparatus used.

Electric Storage Battery Company, Philadelphia, Pa., has issued Bulletin No. 134, under the title "The Chloride Accumulator vs. Feeder Copper in Electric Railway Transmission Systems." The bulletin contains an analysis of the advantages of storage battery installations and an outline of the calculations necessary to determine the number and capacity of the cells required for a given set of conditions when installed with and without a boosted feeder. Appended to this outline are descriptions of typical installations of storage batteries on the Gulfport & Mississippi Traction Company and the Slate Belt Electric Street Railway.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued Descriptive Leaflet No. 2371, which treats of type Q, engine-driven, direct-current interpole generators. It contains illustrations of type Q generators assembled and of the important component parts. Folder No. 4184, entitled "Westinghouse Railway Equipment," describes the spider armature construction used by the Westinghouse Company, its railway motor brush holders, its armature and axle bearings, and its unit switch control systems for 600 and 1200 volts. The comparative advantages of interpole and non-interpole railway motors and of box-frame vs. split-frame motors are also discussed.

Carnegie Steel Company, Pittsburgh, Pa., has issued a booklet entitled "Standard Forged and Heat-Treated Axles, Shafts and Similar Parts." This book gives the results of tension tests, torsion tests and bending tests on two grades of steel, each treated with four different heat treatments. Increased life of an axle may be gained by increasing the ratio between the elastic limit and the fibre stress and the results of the tests given show how the elastic limit and consequently the ratio between elastic limit and fiber stress may be increased by various heat treatments. The company has also published the fourth edition of its "Shape Book," which contains sections, tables and data relating to plates, bars, rails and track accessories. This book supersedes and cancels the issue of 1903, together with all supplements thereto.

NEW PUBLICATION

Air Brake Catechism. Compiled by Robert H. Blackall, New York, 1911. The Norman W. Henley Publishing Company. Cloth, 384 pages. Price, $2.

This book is a practical treatise on the operation and construction of all the parts of air-brake apparatus and contains a practical method of locating and remedying any trouble which may arise.